Northeast Landscape
Forest Policy Inventory Report

A support document to the 2nd Generation MFRC Northeast Landscape Plan

---

October 2013

Minnesota Forest Resources Council

Minnesota Forest Resources Council (MFRC)
Landscape Technical Document # LT1013b
©Copyright 2013, Minnesota Forest Resources Council
This document is on the Internet at http://mn.gov/frc/initiatives_llm_committees_northeast.html

Information about the Minnesota Forest Resources Council and the Landscape Program can be found at www.frc.state.mn.us.

Equal opportunity to participate in and benefit from Minnesota Forest Resources Council programs is available to all individuals regardless of race, color, creed, religion, national origin, sex, marital status, status with regard to public assistance, age, sexual orientation, or disability. Discrimination inquiries should be sent to the Minnesota Forest Resources Council, 1530 Cleveland Ave. N, St. Paul, MN 55108; or the Equal Opportunity Office, Department of the Interior, Washington, D.C. 20240.

This information is available in an alternative format upon request.

Document prepared by: MFRC Northeast Landscape Committee, MFRC Staff (Michael Lynch), and University of Minnesota Staff (Cindy Zerger).

GIS analysis and map creation by: MFRC Staff (Jeff Reinhart).

Please cite this document as:
Minnesota Forest Resource Council. 2013. *Northeast Landscape Forest Policy Inventory Report.* Landscape Program Document #LT11013b. Minnesota Forest Resource Council, St. Paul, Minnesota. Available online at www.frc.state.mn.us.

Table of Contents

Executive Summary

The Minnesota Forest Resources Council was established in 1995 by the Minnesota Legislature to provide advice to public and private organizations on forest sustainability issues. This legislation provided authorization for establishing regional landscape committees to foster landscape-based forest resource planning and coordination. These regional committees provide an opportunity to involve private citizens, forestry professionals and members of various interest groups in developing and implementing landscape-level plans that promote forest sustainability. From 1998 to 2005, landscape plans were prepared for each of the six forested regions in the state.

During the development of the first generation landscape plans, regional committee members suggested that an inventory of existing forest planning documents from stakeholder groups in the region would provide a beneficial foundation to the landscape planning process. Forest policy inventory reports (also known as "landscape perspectives reports") were compiled for five of the regions (excluding the Northeast region as the idea for inventory was developed near the end of the planning process for the Northeast plan).

This Forest Policy Inventory report was prepared to support the development of the second generation landscape plan for the Northeast landscape region. It is a compilation of eleven existing forest resource planning documents from stakeholder groups in Northeast Minnesota. References in each document concerning forest resource issues, visions, goals and strategies were summarized.

Twelve prominent themes were identified from the summaries and are presented with respective goals. This set of common themes can provide guidance to agencies and individuals utilizing this report and assist groups in coordinated landscape management of forest resources. The ideas presented are meant as a preliminary guide for developing specific goals and objectives to implement the landscape plan for the Northeast Landscape region of Minnesota.

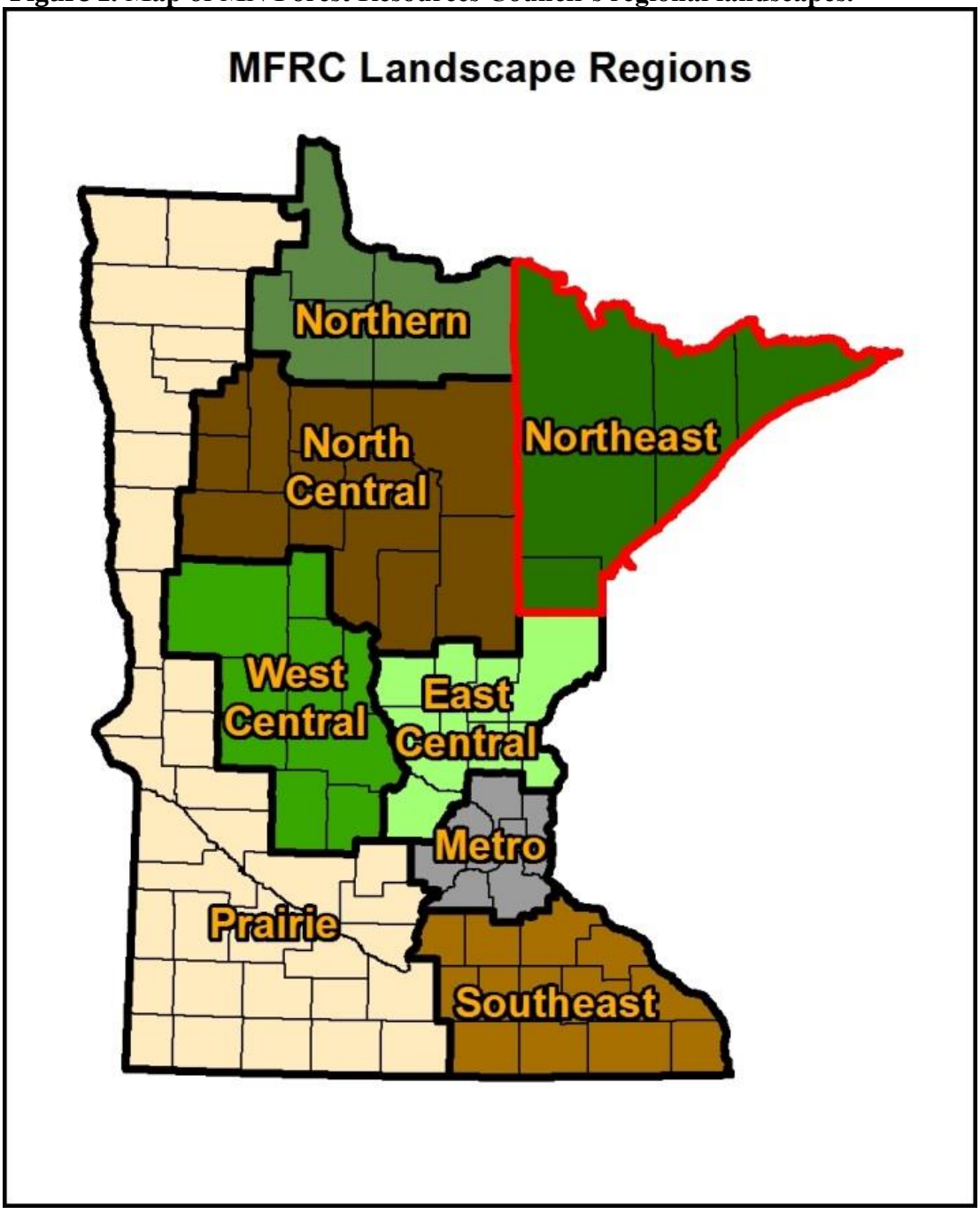
Northeast Landscape common themes:

1. Forest health, productivity, and regeneration
2. Regional tourism, visual quality, and cultural resources
3. Sustainable timber harvest
4. Maintenance of rare native plants and ecosystems
5. Enhanced wildlife populations and habitat
6. Biological diversity of forests in terms of species, age, structure, and spatial arrangement
7. Forest patch size and connectivity
8. Extractives and non-timber commodities
9. Air, soil, and water quality
10. Monitoring, research, and data management
11. Inter-agency coordination of management efforts
12. Assist landowners and the general public in making informed management decisions through education and planning involvement.

Setting

The Minnesota Forest Resources Council defines the Northeast Landscape as the four northeastern counties; Carlton, Cook, Lake, and St. Louis (Figure 1). Eighty-five percent of this 7.3 million acre region is forested. This forest lies entirely within the Laurentian Mixed Forest Province and contains a mix of forests, with the aspen-birch and spruce-fir forest type groups collectively accounting for more than 74% of total forestlands (44.0% and 30.2 % respectively).

Figure 1. Map of MN Forest Resources Council's regional landscapes.



Methods and Definitions

The main objective of this report is to highlight the landscape issues, visions, goals, and strategies presented in forest resource management and planning documents for Northeast Minnesota. As this is a qualitative summary that involves a great deal of categorization, the authors used the following definitions to minimize bias in classifying the data into these four components.

- Issues: An issue is a concern based on current information and peoples' values. It relates to a problem or focus area that the forest resources report addresses. It may be a general idea, "there is not enough wildlife", or very specific, "native tree species in this county are ten times below their historic range". Issues assist in developing a vision.

- Visions: A vision is a look into the future. In landscape planning, a vision refers to future conditions of an area in 100 years or greater. It often is very vague, yet helps managers and stakeholders come to agreement and begin to develop goals. To continue from the examples above, some visions might be to "conserve biodiversity" and "promote regeneration of forestlands."

- Goals: Goals are specific benchmarks that strive toward addressing the vision and resolving the issues. Goals often look in the near future, 10 to 20 years from now. Goals are detailed and assist in developing strategies that address the vision. Given the example above, some goals may be to "limit development within environmental corridors to promote biodiversity" and "increase occurrence of native tree species by 30 percent"

- Strategies: Strategies are methods to accomplish goals and move toward achieving a vision. They provide land managers with tools and techniques to accomplish goals. Landowners often use only strategies that apply to their land. Examples of strategies would be "use direct seeding methods on sites suitable for native plant species" and "reduce high grading of trees and if possible increase natural regeneration through appropriate silvicultural methods". It is important to note that not all strategies apply to all land managers because of their specific nature. Strategies may require particular site characteristics, resources, or land manager objectives in order for implementation to be successful.

In order to fulfill the objectives of the study, forest and related resource management and planning documents were gathered from stakeholder groups in the region. Eleven documents were reviewed and summarized for this draft inventory. Each document was reviewed and summarized according to the four categories defined above. These summaries are presented at the end of the next chapter in the section, Management and Planning Report Summaries. After all eleven documents were reviewed and summarized they were examined for common themes. Twelve main themes were identified based on their presence in multiple reports. Following these themes are the corresponding goals taken from the individual summaries. In many cases, goals apply to more than one theme, and thus were included under multiple themes.

It is important to note that the focus of this study was on forest resources. As defined in Minnesota statute, forest resources are those natural assets of forest lands, including timber and other forest crops; biological diversity; recreation; fish and wildlife habitat; wilderness; rare and distinctive flora and fauna; air; water; soil; and educational, aesthetic, and historic values. Other themes may have been present in the reviewed documents, however, only those references relating to forest resources were used in developing the landscape policy inventory.

The contents of this report are meant to serve as a guide for landscape planning and coordination. As planning and implementation progresses, many of the components present will likely be refined and regrouped as is seen fit.

Forest Policy Inventory Summary

The summarized management and planning documents are numbered below. Behind each theme, documents are referenced based upon their number in this list. A comprehensive common theme statement was prepared as a template to provide guidance to agencies and individuals utilizing this report. The common theme statement is merely an example based upon the authors' interpretations of the summarized reports.

Documents Summarized

1. Superior National Forest Land and Resource Management Plan (2004)
2. Fond du Lac 2008 Integrated Resource Management Plan (2008)
3. DNR - Border Lakes Subsection Forest Resources Management Plan (2005)
4. DNR - Mille Lacs Uplands Subsection Forest Resources Management Plan (2008)
5. DNR - North Shore Highlands, Toimi Uplands, Laurentian Uplands Subsection Forest Resources Management Plan (2004)
6. DNR - St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork-Vermillion Uplands Subsection Forest Resources Management Plan (2010)
7. Carlton County Management Plan for Tax-Forfeited Lands (2004)
8. Lake County Forest Management Plan (2007)
9. St. Louis County Land Department Long-Term Resource Management Plan (2006)
10. St. Louis County 2010-2012 Land Department Business Plan (2010)
11. Cook County Wildfire Protection Plan (2009)

Common Themes

The eleven forest management plans reviewed for this inventory shared several common themes. Maintaining healthy, resilient, forests was a primary concern identified in nearly every plan reviewed for this Northeast Landscape Policy Inventory Report. Plans also identified recreation and tourism opportunities and sustainable timber harvest as primary issues in long term planning for Northeastern Minnesota forests. Many plans also focused on proper management of forestland and wetlands to protect rare species and enhance wildlife populations and habitat. Several plans also focused on creating a productive, healthy forest through increased biological and structural diversity and patch size management. Other common themes related to non-timber commodities and extractives, environmental quality, monitoring, and private landowner involvement.

Themes expressed in Northeast Landscape Planning Committee meetings not highlighted extensively in the summarized plans included urban-wildland interface fire management, invasive species, and climate change.

Common Themes

In this section the eleven prominent themes are highlighted, followed by numbers of the corresponding documents that dealt with each theme. The themes are presented in order based upon the number of documents that referenced each particular theme i.e. the first theme was referenced by the greatest number of documents. Below each theme are specific goals from the document summaries that concern this topic. The goals are listed in random order, with the documents that contained each specific goal referred to in parentheses.

1. Forest health, productivity, and regeneration. (1, 2, 3, 4, 5, 6, 7, 8, 10)

- Diverse, productive, healthy, and resilient native vegetation communities (1).
- Management of Insects, Diseases, and Disturbance Processes (1).
- Natural resources are of a high quality, offering land for sustainable levels of traditional hunting, fishing, and gathering activities within naturally functioning, viable ecosystems (2).
- Ecological silviculture will be used to guide forest management decisions. A limited harvest zone will be established within a ¼ mile of the wild rice lakes and ¼ mile of the St. Louis River (2).
- Genetic variability of tree species is retained (3).
- Benefits derived from efforts to regenerate forests after harvest are maximized (4).
- The amount of white pine in the subsection has increased by 100 percent over 2002 levels (4).
- New infestations of invasive exotic species on public forest lands are rare, and the spread of existing populations is controlled (4).
- Ecosystem classification tools have helped DNR resource managers identify species most likely to be productive on a specific site, as indicated by soil and native plant information (4).
- Diverse, high-quality mixed hardwood stands are managed by skilled forest managers and selectively harvested by highly trained logging professionals for continuous quality improvement and production of timber, while maintaining forest cover and establishing regeneration (4).
- Even-aged managed cover types will be managed to move toward a balanced age-class structure (5).
- Timber productivity and quality on state timberlands is increased (5).
- Limit damage to forests from insects, disease, and exotic species to acceptable levels where feasible (5).
- Reduce the negative impacts caused by wildlife species on forest vegetation on state forestlands (5).
- Forest management on state lands attempts to mitigate global climate change effects on forestlands. Management is based on our current knowledge and will be adjusted based on future research findings (5).
- The SFRMP treatment level for each cover type moves toward the desired age-class structure of even-aged cover types (both normal and extended rotation forest), and improves the age-structure and timber quality of uneven-aged cover types (5).

- Disturbance events that occur on state land within these three subsections are promptly evaluated to determine the appropriate forest management needed to address the impacts of the disturbance on the landscape (5).
- Even-aged managed cover types will be managed to move toward a balanced age-class structure (6).
- Timber productivity and quality on state timber lands is increased (6).
- Limit damage to forests from insects, disease, and exotic species to acceptable levels where feasible (6).
- Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands (6).
- Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings (6).
- Natural disturbance events that occur on state land within these subsections are promptly evaluated to determine the appropriate forest management need to their impacts (6).
- Produce and make available a viable mix of merchantable timber species at sustainable levels within limits set by sound silvicultural and ecological practices (7).
- Forest Management (8).
- Integrated pest management (8).
- Retain a minimum land base of approximately 879,000 acres of tax forfeited trust land suitable for ongoing management for multiple values including forest products, recreation, and ecological functions (9).
- Maintaining and improving forest health and productivity (10).
- Protecting wildlife habitat, soil resources, and water quality (10).
- Providing raw material for local industry and financial return to the County and taxing districts (10).

2. <u>Regional tourism, visual quality, and cultural resources (1, 2, 4, 5, 6, 7, 8, 9, 10)</u>

- Maintain and preserve heritage resource qualities for which they have been deemed significant and for benefits that may include: research, education, historical perspectives in land management, and general appreciation of American heritage (1).
- Provide a range of quality motorized and non-motorized recreation opportunities to satisfy diverse public interests while maintaining sustainable ecosystems (1).
- Trail system to provide a range of activities and experiences necessary to accommodate recreation uses while minimizing environmental and social impacts (1).
- Provide RMV road and trail riding opportunities with experiences in a variety of forest environments, while protecting natural resources (1).
- Provide a range of water access with related recreation opportunities on lakes and river segments (1).
- Provide landscapes with a range of high to low scenic quality, displaying little of no evidence of management activities to low scenic quality where evidence of management activities dominate. High scenic quality protected or enhanced in landscapes with outstanding scenic value and in high public use recreation areas and corridors (1).
- Existing National Forest System roads suitable for passenger vehicles provide a safe and affordable system for administrative and public access to NFS land (1).

- Manage the BWCAW in a manner that perpetuates and protects its unique natural ecosystems, provides an enduring wilderness resource for future generations, and provides opportunities for a primitive and unconfined recreation experience (1).
- A Tribal Historical Preservation Office (THPO) will be employed to better meet requirements of Section 106 (1); Historical and cultural resources are protected for the benefit and knowledge of future generations (2).
- Establish a recreation program with emphasis on motorized and non-motorized trails. Establish regulations for motorized trail use (2).
- DNR Forest managers minimize the visual and aural impact of forest management activities on users of state forests, thereby supporting and enhancing multiple-use values of state forest land (4).
- Minimize forest management impacts on visual quality (5).
- Cultural resources will be protected on state-administered lands (5).
- Minimize forest management impacts on visual quality in sensitive areas (6).
- Cultural resources will be protected on state-administered lands (6).
- Maintain a natural resource base which generates sustained timber yields as determined by the quality of the land, establishes a diversity of habitats and ecosystems appropriate to the region, and encourages multiple use within the framework of a forest ecosystem management approach that recognizes the potential and limitations of the County resource as one part of a larger resource and management perspective (7).
- Provide quality opportunities for dispersed recreation (e.g., trails, hunting, wildlife watching) (7).
- Protect and preserve all features that have significant scientific, cultural, or educational value (7).
- Recreational facilities and opportunities, existing and future (8).
- Known special sites on county managed lands are protected (9).
- Roughly 840-860,000 acres of land base to provide a variety of dispersed recreation opportunities (9).
- No more than 660 non-shoreland cabin leases (9).
- Maintain or reduce the number of shoreland cabin leases (9).
- All recreation trails on State tax forfeited lands are identified, mapped, and designated as to use (9).
- Minimal level of off-trail travel by motorized recreational vehicles with no damage to sensitive areas and no harm to forest management (e.g., regeneration) (9).
- No non-authorized structures including permanent hunting stands on State tax forfeited lands (9).
- Providing opportunity for tourism and recreation (10).

3. Sustainable timber harvest (1, 3, 4, 5, 6, 7, 8, 9, 10)

- Provide commodity resources in an environmentally sustainable and acceptable manner to contribute to the social and economic sustainability and diversity of local communities. Provide non-commodity opportunities in an environmentally sustainable and socially acceptable manner to contribute to social sustainability and vitality of local resident's way of life, cultural integrity, and social cohesion (1).
- State forest lands in the subsection provide a sustainable timber harvest level, which considers current and future ecological, economic, and social needs (3).

- Timber productivity on state forest lands is increased through more intensive management on some lands (3).
- Access is provided for management of state forest lands while protecting or minimizing negative effects on other forest resources (3).
- Timberlands in the planning area are highly productive. They produce good quality hardwood and softwood logs for manufacturing and export, as well as a good quantity of pulpwood to supply Minnesota's pulp and paper industries (4).
- Utilization of species and grades of timber are optimized to maximize the benefits these resources provide (4).
- Ecosystem classification tools have helped DNR resource managers identify species most likely to be productive on a specific site, as indicated by soil and native plant information (4).
- Diverse, high-quality mixed hardwood stands are managed by skilled forest managers and selectively harvested by highly trained logging professionals for continuous quality improvement and production of timber, while maintaining forest cover and establishing regeneration (4).
- Timber productivity and quality on state timberlands is increased (5).
- Old forest in these subsections is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity (6).
- Timber productivity and quality on state timber lands is increased (6).
- Maintain a natural resource base which generates sustained timber yields as determined by the quality of the land, establishes a diversity of habitats and ecosystems appropriate to the region, and encourages multiple use within the framework of a forest ecosystem management approach that recognizes the potential and limitations of the County resource as one part of a larger resource and management perspective (7).
- Timber access (8).
- Fuelwood (8).
- Timber Flow (8).
- Retain a minimum land base of approximately 879,000 acres of tax forfeited trust land suitable for ongoing management for multiple values including forest products, recreation, and ecological functions (9).
- Providing raw material for local industry and financial return to the County and taxing districts (10).

4. <u>Maintenance rare native plants and ecosystems (1, 2, 3, 4, 5, 6, 8, 9)</u>

- Diverse, productive, healthy, and resilient native vegetation communities (1).
- Natural resources are of a high quality, offering land for sustainable levels of traditional hunting, fishing, and gathering activities within naturally functioning, viable ecosystems (2).
- Rare and sensitive species and plant communities are protected (3).
- Ecological processes and biodiversity are protected when managing forest vegetation (3).
- Native plant communities that were historically well represented in the planning area are well represented today (4).
- Healthy butternut specimens on state and private lands are protected pending the development of trees resistant to butternut canker (4).

- Management of state lands with MCBS sites of statewide biodiversity significance implements measures to sustain or minimize the loss of the biodiversity significance factors on which these MCBS sites were ranked (5, 6).
- Rare native plant communities are protected, maintained, or enhanced in these subsections (5, 6).
- Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections (5, 6).
- Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in these subsections (6).
- Special management areas (8).
- Development of management systems (including location, harvest, regeneration, succession, etc.) based upon native plant community (9).
- Representation across the range of habitats supportable by the ecological potential of the tax forfeited land base with a geographic distribution, variation in size and character, and other attributes as necessary for sustaining the habitat and the species and biotic communities that depend upon it (9).

5. <u>Enhanced wildlife populations and habitat. (1, 2, 4, 5, 6, 8, 9, 10)</u>

- Diverse, productive, healthy, and resilient terrestrial and aquatic wildlife (1).
- Improve wild rice harvest by conducting monitoring and restoration in the Ceded territories (2).
- Improve and increase fish population assessments both on the Reservation and within both the 1854 and 1837 Ceded Territories, with the goal of adding harvest opportunities (2).
- Natural resources are of a high quality, offering land for sustainable levels of traditional hunting, fishing, and gathering activities within naturally functioning, viable ecosystems (2).
- Increased staffing with additional skilled positions will allow the Wildlife Program to address more of the needs and opportunities for wildlife in the two Ceded Territories and on the Reservation (2).
- Specific areas are managed to maintain open landscapes needed to maintain populations of species of management concern (4).
- State lands contribute important habitat and population support for the 439 permanent and regular resident wildlife species that exist in Minnesota. Populations for various species are monitored and habitats for game and nongame species are valued and protected (4).
- Areas of unusual ecological significance are valued and protected as areas for study and conservation of both plant and animal rare species, sources of biological diversity, and ecological benchmarks (4).
- Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species (4).
- Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals (4).

- Habitat fragmentation is managed to minimize the impacts on species that are negatively affected by fragmentation (5).
- Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections (5).
- Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections (5).
- Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections (5).
- Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species (5).
- Old forest in these subsections is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity (6).
- Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections (6).
- Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections (6).
- Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species (6).
- Special management areas (8).
- Retain a minimum land base of approximately 879,000 acres of tax forfeited trust land suitable for ongoing management for multiple values including forest products, recreation, and ecological functions (9).
- Representation across the range of habitats supportable by the ecological potential of the tax forfeited land base with a geographic distribution, variation in size and character, and other attributes as necessary for sustaining the habitat and the species and biotic communities that depend upon it (9).
- Protecting wildlife habitat, soil resources, and water quality (10).

6. <u>Biological diversity of forests in terms of species, age, structure, and spatial arrangement (1, 2, 3, 4, 5, 6, 7, 9)</u>

- Diverse, productive, healthy, and resilient native vegetation communities (1).
- Ecological silviculture will be used to guide forest management decisions. A limited harvest zone will be established within a ¼ mile of the wild rice lakes and ¼ mile of the St. Louis River (2).
- Acres of upland conifer cover types in the subsection have increased (3).
- More acres of the upland brush cover type are identified in the subsection (3).
- Species diversity within stands has increases, especially in mixed conifer/hardwood stands, and structural diversity has been maintained or increased (3).
- Age diversity within conifer and hardwood stands has increased, especially in white pine stands (3).
- Even-aged managed forest cover types have a balanced age-class structure (3).
- State lands have more old pine and other conifers (3).
- Old forest component is retained on state lands (3).

- Forests in the Mille Lacs Uplands, Glacial Lakes Superior Plain, and St. Croix Moraines (planning area) are diverse in age and structure and there are both older and young, regenerating forests (4).
- At least 10 percent of lands administered by the Divisions of Forestry and Wildlife in the planning area are managed as older forests (4).
- ERF (extended rotation forest) areas are located where they will provide the desired timber quality and old forest attributes (4).
- The amount of white cedar in the subsection has increased over 2002 levels; an improved age-class structure indicates greatly improved regeneration success (4).
- The birch cover type has increased by 50 percent over 2002 levels and shows a greatly improved age-class distribution (4).
- The aspen cover type is reduced by 5 percent from 2002 levels by selective removal of aspen to favor an existing species, natural stand conversion through succession, replanting, or under planting with another species (4).
- State Nurseries have access to sources of seed and other propagation materials from a variety of environments. The sources are identified and protected in the course of forest management (4).
- The oak type (red oak, bur oak, and white oak) has increased slightly (2 percent) over 2002 acreage. Oak stands are managed using even-aged or two-aged systems, with even-aged predominant (4).
- Northern Hardwood stands average sixty to eighty years of age with representatives of all age classes. Stands have between eighty and one hundred forty sq. ft. of basal area, with most being maintained between eighty and one hundred twenty sq. ft. After the year 2122, northern hardwood acres should be equally divided among basal area classes 80-100, 101-120, and 121-140 for perpetuity (4).
- Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals (4).
- Old forest in these subsections is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity (5, 6).
- Forest cover-type composition on state lands moves closer to the range of cover-type composition that historically occurred within the ecosystems found in these subsections (5, 6).
- Even-aged managed cover types will be managed to move toward a balanced age-class structure (6).
- ERF stands in even-aged managed cover types will be managed to achieve a declining age-class structure from the normal rotation age to the maximum rotation age (5, 6).
- State lands will include representation of each of the Native Plant Community (NPC) growth stages that historically occurred in these subsections (5, 6).
- Young, early-successional forest is distributed across the landscape over time (5, 6).
- Species, age, and structural diversity within some stands will be maintained or increased (5, 6).
- Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities (5, 6).
- The SFRMP treatment level for each cover type moves toward the desired age-class structure of even-age managed cover types (both normal and extended rotation forest),

and improves the age structure and timber quality of uneven-age managed cover types (5, 6).

- Maintain a natural resource base which generates sustained timber yields as determined by the quality of the land, establishes a diversity of habitats and ecosystems appropriate to the region, and encourages multiple use within the framework of a forest ecosystem management approach that recognizes the potential and limitations of the County resource as one part of a larger resource and management perspective (7).
- Recognize the responsibility to maintain a diversity of distinct ecosystems and habitats which are appropriate to the region and which are within the capability of the County resource to satisfactorily and viably sustain (7).
- Northern mixed forest (aspen / birch / spruce / fir): Reduce number of acres with aspen emphasis from around 300,000 to 290,000; reduce number of acres with birch emphasis from around 54,000 to 44,000 or less; maintain number of acres with balsam fir emphasis; and increase number of acres with white spruce emphasis or major component from 6,600 to 7,500 (9).
- Lowland conifer: Maintain number of acres within general type and for each species (tamarack, black spruce, northern white cedar) (9).
- Jack Pine / black spruce: Increase jack pine acres from 6,200 to 6,800; double upland black spruce acres from 1,400 to 2,800; introduce upland tamarack as a component species where possible (9).
- Northern Hardwoods: Maintain number of acres and increase white cedar and tamarack component (9).
- Red and White Pine: Increase number of acres from 23,300 to 26,000 (9).
- Ash and Lowland Hardwoods: Maintain number of acres (9)
- Seek appropriate distribution of forest cover in terms of vegetation growth stage for each native plant community (9).
- Old growth cover types on State tax forfeited lands are sustained (9).

7. Forest patch size and connectivity (1, 3, 4, 5, 6, 7, 8, 9)

- Maintain a road and trail system that provides opportunities for people to access the National Forest (1).
- Average patch size is larger (3).
- Connectivity between patches is maintained (3).
- Some large old patches are maintained across the subsection (3).
- Patches are distributed in a range of sizes and ages (3).
- Patches are representative of the cover types in the subsection (3).
- Forests are managed for a variety of patch sizes. Large, contiguous patches of forest are maintained in designated areas, while other parts of the Mille Lacs uplands are managed for smaller or medium patch sizes (4).
- Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction (4).
- Patch management in these subsections maintains existing large patches and increases the average patch size on state lands over time, with consideration of natural spatial patterns (5).

- Habitat fragmentation is managed to minimize the impacts on species that are negatively affected by fragmentation (5).
- Patch management in these subsections maintains existing large patches and increases the average patch size on state lands over time, with consideration of natural spatial patterns (6).
- Provide access to County managed lands appropriately to protect, manage, and utilize forest resources for all programs and multiple uses (7).
- Timber access (8).
- Land Consolidation (8).
- Consolidated ownership with most land contained in large contiguous blocks and significantly reduced amount of land in isolated, unmanageable parcels so as to facilitate more effective overall management (9).
- Maintenance of forest road system at a level of 250 miles (9).

8. Extractives and non-timber commodities (1, 2, 5, 7, 8, 9, 10)

- Exploration and development of mineral and mineral material resources is allowed on National Forest System land, except for federally owned minerals in designated wilderness (BWCAW) and the Mining Protection Area (MPA). Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and national defense (1).
- Outside of the BWCAW, generally provide for utility transmission corridors and communication sites. Emphasize the use of common corridors and multiple use sites when granting appropriate right-of-ways (1).
- Natural resources are of a high quality, offering land for sustainable levels of traditional hunting, fishing, and gathering activities within naturally functioning, viable ecosystems (2).
- The harvest of non-timber forest products is managed to provide a sustainable supply for humans while providing for wildlife habitat and biodiversity (5).
- Understand the economic potential of its non-timber resources and, as ecological and market conditions allow, realize that potential (7).
- Gravel (8).
- Commercially harvested non-timber forest products (8).
- Retention of all significant known and suspected gravel/sand resources on State tax forfeited lands (9).
- Minimum number of gravel/sand pits open at any given time required to adequately serve the various geographic areas of the county (9).
- Responsible harvest, in terms of amount and practice, of other non-timber commodities (9).
- Providing raw material for local industry and financial return to the County and taxing districts (10).

9. Air, soil, and water quality. (1, 2, 3, 4, 5, 6)

- Maintain the ambient air on the Forest within the National Ambient Air Quality Standards and the Minnesota Ambient Air Quality Standards (1).
- Healthy Watershed Health, Riparian Areas, and Soil Resources (1).

- Improve wild rice harvest by conducting monitoring and restoration in the Ceded territories (2)
- Pursue additional regulatory authority under the Clean Water Act to assert tribal sovereignty on Reservation. Prioritize Big Lake community wastewater project for funding. (2).
- Add toxics monitoring and additional stations to better monitor air quality for members' health (2).
- Water quality is protected and natural processes are allowed to occur (3).
- Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species (4).
- Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals (4).
- Forest management on state lands adequately protects wetlands and seasonal ponds (5).
- Forest management on state lands adequately protects wetlands and seasonal ponds (6).

10. <u>Monitoring, research, and data management (1, 4, 7, 8, 9, 10)</u>

- Develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability (1).
- Forest inventory data are detailed and current enough to be relied upon in a wide variety of planning and analysis projects. Forestry databases provide a link between generations of forest managers with respect to both strategic and operational decisions that have been made for a specific forested community (4).
- Develop and maintain a comprehensive, appropriately organized, easily understood, and coordinated system for managing and administering tax-forfeited and other designated lands under County jurisdiction (7).
- Geographic Information Systems and Monitoring (8).
- Development of integrated forest resource databases as basis for strategic and tactical management and monitoring (9).
- All recreation trails on State tax forfeited lands are identified, mapped, and designated as to use (9).
- Providing scientific research (10).

11. <u>Inter-agency coordination of management efforts. (1, 4, 5, 6, 11)</u>

- Cooperative management (1).
- Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction (4).
- Minnesota DNR resource managers routinely collaborate with other landowners to develop consistent goals and landscape-level strategic plans (4).
- Losses due to forest insects and diseases on private and state forest land are minimized, as are the effects of pest management on non-target species (4).
- Forest managers have stakeholder support for employment of a full suite of forest management options as appropriate to reach identified goals (4).

- Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction (5).
- Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction (6).
- Defines the steps and recommendations developed by a core planning committee, and the final recommendations as edited, reviewed and prioritized by the local community (11).

12. <u>Assist landowners and the general public in making informed management decisions through education and planning involvement. (1, 4, 7, 11)</u>

- Consistency with Minnesota Forest Resources Council (MFRC) Voluntary Site-level Guidelines (1).
- Progress toward the vision for the subsection(s) forest (or DFFCs) is enhanced by engaging nonindustrial private forest landowners, providing a level of consistency across ownerships with regard to forest management in a given landscape unit (4).
- The public is involved in forest management planning during designated review periods (4).
- Promote a greater sense of stewardship among the general public towards the natural resources within the county and to foster a sound understanding of the management goals and activities of the Land Department (7).
- Defines the steps and recommendations developed by a core planning committee, and the final recommendations as edited, reviewed and prioritized by the local community (11).

Management and Planning Report Summaries

1. Superior National Forest Land and Resource Management Plan

Document Title	Source	Date	URL or Address
Land and Resource Management Plan: Superior National Forest	USDA Forest Service	2004	Randy Moore, Regional Forester 626 E. Wisconsin Avenue, Suite 800 Milwaukee, WI 53202 414/297-3600

Geographic Extent / Scope: Superior National Forest. The Forest spans 150 miles along the United States-Canadian border covering roughly three million acres in northeastern Minnesota's arrowhead region.

Organizations / Agencies involved in plan creation: The revised Plan is a result of extensive analysis and considerations addressed in the accompanying Final Environmental Impact Statement (EIS).

Info on Planning Process: The EIS refers to or describes the planning process and the analysis procedures used to develop the revised Plan. The EIS also describes other alternatives for the Forest Plan considered in the planning process.

Purpose of plan: The Superior National Forest Land and Resources Management Plan (Revised Plan) is a 15-year strategy for managing National Forest resources. The strategy outlines environmentally sound management to achieve desired conditions and produce goods and services in a way that maximizes long-term net public benefits. The Revised Plan emphasizes different desired conditions and goals for various parts of the Forest. As the Revised Plan is implemented, management practices such as building and maintaining roads, restoring streams, harvesting timber, and rehabilitating campgrounds will occur in some areas, but not in others. Multiple-use goals and objectives will be achieved in a balanced, cost efficient and sustainable manner. The purpose of the Forest Plan is to provide management direction to ensure that ecosystems are capable of providing a sustainable flow of beneficial goods and services to the public.

VISION(S) (Mission and Forest-wide Goals)

- SNF Mission: To sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generation (pg. 2-5)
- Promote ecosystem health and conservation using a collaborative approach to sustain the nation's forests and watersheds.
- Protect, and where appropriate, restore soil, air, and water resources.
- Provide for a variety of life by managing biologically diverse ecosystems.
- Provide for sustained forest product uses in an environmentally acceptable manner.
- Provide forest settings and natural resources that enhance social and economic benefits at local, regional, and national levels.

- Provide a variety of uses, values, products, and services for present and future generations by managing within the capability of sustainable ecosystems.
- Provide management direction that enhances social and economic benefits for individuals and communities:
  - Emphasize scenic quality in areas of high interest to people
  - Emphasize a variety of forest settings that provide for a spectrum of social opportunities and benefits for people
  - Maintain a road and trail system that provides opportunities for people to access the National Forest
  - Contribute to local, regional, and national economies by providing natural resources in a socially and environmentally acceptable manner
  - Contribute to efforts to sustain the American Indian way of life, cultural integrity, social cohesion, and economic well-being.
- Develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability.

GOALS (Desired conditions)

1. Cooperative management
2. Consistency with Minnesota Forest Resources Council (MFRC) Voluntary Site-level Guidelines
3. Maintain the ambient air on the Forest within the National Ambient Air Quality Standards and the Minnesota Ambient Air Quality Standards.
4. Exploration and development of mineral and mineral material resources is allowed on National Forest System land, except for federally owned minerals in designated wilderness (BWCAW) and the Mining Protection Area (MPA). Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and national defense.
5. Healthy Watershed Health, Riparian Areas, and Soil Resources.
6. Management of Insects, Diseases, and Disturbance Processes.
7. Diverse, productive, healthy, and resilient native vegetation communities.
8. Diverse, productive, healthy, and resilient terrestrial and aquatic wildlife.
9. Provide commodity resources in an environmentally sustainable and acceptable manner to contribute to the social and economic sustainability and diversity of local communities. Provide non-commodity opportunities in an environmentally sustainable and socially acceptable manner to contribute to social sustainability and vitality of local resident's way of life, cultural integrity, and social cohesion.
10. Tribal rights and interests.
11. Maintain and preserve heritage resource qualities for which they have been deemed significant and for benefits that may include: research, education, historical perspectives in land management, and general appreciation of American heritage.
12. Provide a range of quality motorized and non-motorized recreation opportunities to satisfy diverse public interests while maintaining sustainable ecosystems.
13. Trail system to provide a range of activities and experiences necessary to accommodate recreation uses while minimizing environmental and social impacts.
14. Provide RMV road and trail riding opportunities with experiences in a variety of forest environments, while protecting natural resources.

15. Provide a range of water access with related recreation opportunities on lakes and river segments.
16. Provide landscapes with a range of high to low scenic quality, displaying little of no evidence of management activities to low scenic quality where evidence of management activities dominate. High scenic quality protected or enhanced in landscapes with outstanding scenic value and in high public use recreation areas and corridors.
17. Existing National Forest System roads suitable for passenger vehicles provide a safe and affordable system for administrative and public access to NFS land.
18. Manage the BWCAW in a manner that perpetuates and protects its unique natural ecosystems, provides an enduring wilderness resource for future generations, and provides opportunities for a primitive and unconfined recreation experience.
19. Outside of the BWCAW, generally provide for utility transmission corridors and communication sites. Emphasize the use of common corridors and multiple use sites when granting appropriate right-of-ways.
20. Public and employee health and safety are of primary concern while managing the National Forest.

STRATEGIES (Objectives) (# indicates goal)

1. Work cooperatively with other landowners and land managers to protect, enhance, and restore physical and biological resources as well as social and economic values; Cooperative management includes tribal, State, county, local governments as well as other federal agencies (1).
2. Implement the MFRC management guidelines when managing forest resources on the National Forest (2).
3. Prescribed burning activities on the National Forest will only be conducted if they comply with requirements of the most current Minnesota Smoke Management Plan (3).
4. Permitting requirements; limits on removals per year; proper management and oversight (4).
5. Regulate uses (e.g., motorized / non-motorized watercraft, camping, fishing, swimming, wild rice harvesting); maintenance and restoration for native species success; proper management; recognition of hydrologic system in all practices (5).
6. Integrated pest management approaches, recognition of natural processes (pests, fires, and disturbance); increase amount of forest restored to reduce risk of damage from fires, insects, and diseases, educational programs, sustainable timber harvest (space and time); forest regeneration standards (6).
7. Improve degraded areas; increase diversity where appropriate; maintain ecological processes and restore or emulate where appropriate; consider both landscape and site level scales; full range of species age class; vegetation standards for various areas (7).
8. Full spectrum of habitats and conditions (and quantity and quality) necessary for biological diversity; consider time and space (natural cycles, community cycles); maintain viable populations for existing native and desired non-native species; contribute to the conservation and recovery of federally-listed species; provide wildlife watching and hunting opportunities and education people about economic potential associated with these activities; manage disruption by humans; compatible road / trail development; specific strategies for indicator species; threatened/endangered species; sensitive species; indicator habitats; non-native invasive species; aquatic communities; species of interest (8).

9. Promote and protect area cultural values, traditional employment, rec opportunities, historic landscape features, commodity related natural resources, and aesthetic qualities of the forest; improve delivery of services to urban communities; increase accessibility of a diversity of people and members of underserved and low-income populations (9).
10. Serve to help sustain American Indians' way of life, cultural integrity, social cohesion, and economic well-being; work with in a govt-to-govt context (respect and not hierarchical), improve relationships with tribes to better understand values, needs, interests, and expectations and develop cooperative management and partnership; respect; formal training for employees to work with tribes (10).
11. Identify, evaluate, protect, monitor, and preserve heritage resources; Promote heritage values in public education and outreach; Contribute relevant historical and cultural perspectives to natural resource management (11).
12. Appropriate recreational opportunities; development of sites/opportunities in appropriate settings; coordination and cooperation with federal and local organizations which provide rec ops; little or no disruption to forest management activities; regulations, constraints, and supervision of recreation use are limited to those necessary for resource protection, visitor satisfaction, and safety; provide a spectrum of opportunities (12).
13. Management and maintenance for intended use(s); opportunities in a variety of forest settings; meet user demand (13).
14. Clearly defined uses and location of uses; allowance of RMVs in prohibited areas for law enforcement, emergency, etc.; maximum development mileage amount; clear description of types of uses and types of RMV development (14).
15. Standards for development (low development in remote access areas, ramp design); educational signs regarding exotic species; context sensitive development and maintenance (15).
16. Appropriate landscape and vegetative management to provide scenic opportunities; scenic integrity objectives defined and set as a minimum criteria; development and structures should not impede function of site / landscape; natural appearing edges, not straight edges will generally be used; minimize negative visible impacts of utilities and new rights-of-way (16).
17. Transportation system designed with consideration to environmental, social, and health concerns; adequate access to NFS and non-NFS land; decommission temporary roads after use is completed; minimize roads and trail crossings of streams, wetlands and riparian areas adjacent to lakes and streams; decommission unneeded roads; decommission approximately 80 miles of road; context sensitive design (17).
18. Protect and perpetuate natural ecosystems; provide an enduring resource of wilderness for future generations; provide unconfined primitive recreation opportunities (18).
19. Administer a recreation use program for providing recreation uses associate with resorts, residences, camps; manage permitting appropriately; bury utility lines in existing right-of-ways when possible; consider development (of camps, etc.) opportunities where proposed use would meet a specific public demand that cannot be met on other ownership (19).
20. Health and safety is paramount in development and management; appropriately deal with hazardous materials; coordinate with other agencies as necessary; ensure public and non-public water supplies are safe for use; update wastewater systems as necessary to meet federal guidelines (20).

2. Fond du Lac Resource Management: 2008 Integrated Resource Management Plan

Document Title	Source	Date	URL or Address
Fond du Lac Resource Management: 2008 Integrated Resource Management Plan	Fond du Lac Band of Lake Superior Chippewa	2008	www.fdlrez.com/newnr/main.htm

Geographic Extent / Scope: The Fond du Lac Reservation is located in east central Minnesota, about 20 miles west, southwest of Duluth. The exterior boundary encompasses 101,426 acres, of which 25,087 acres are Trust land and 5,002 acres of Fond du Lac Band Fee land. The remaining 71,337 acres are state, county and private holdings. The trust land status is divided into two types: 8096 acres of tribal/band land and 16,991 acres of allotted land. Land ownership does not include individual Indians who own parcels of land and are in fee status.

Organizations / Agencies involved in plan creation: Natural resource managers (wildlife, wild rice, water, fisheries, forestry, lands, environmental quality, energy, conservation/enforcement, and cultural resources). Series of public meetings; two with Elders' groups, an open meeting widely advertised. The Reservation Conservation Committee helped set up management strategy and provide guidance to the program.

Info on Planning Process: Followed procedures developed by the Bureau of Indian Affairs– Office of Trust Responsibilities and outlined in 'A Tribal Executive's Guide to Integrated Resource Management Planning.'

Purpose of plan: This Integrated Resource Management Plan is intended to be a management guide for the Fond du Lac managers. It will provide goals and objectives for present and future resource managers, and will provide a framework for project activity planning and decision-making. It will also help resource managers and/or the Reservation Business Committee in the planning of a specific project.

VISION

The Fond du Lac Resource Management Division is committed to the management, conservation, and sustainability of the natural resources of the Fond du Lac Band in order to protect the environment on the Fond du Lac Reservation and within its treaty areas. The Resource Management Division will use the tools of research, education and outreach with Band Members, partners and stakeholders to accomplish these goals.

ISSUES (topics, issues, concerns, opportunities)

1. Cultural and Traditional Resources
   a. Protecting known sites
   b. Preventing looting of cultural artifacts
   c. Keeping highly sensitive information private
2. Wild Rice
   a. Ineffectiveness of current mechanical methods for the restoration project on Rice Portage Lake

   b. Mud Lake continues to produce a thin crop of wild rice, despite its potential for higher yields
   c. Invasive species
   d. Climate change
3. Water and Wetlands
   a. Collecting physical, chemical, and biological data from other Reservation water bodies as baseline characterization of those resources
   b. St. Louis River is threatened by proposed discharges from new taconite and sulfide mineral mining projects upstream of the Reservation
   c. Mercury in fish
   d. Non-point water pollution
   e. Construction of wastewater collection and treatment system for Big Lake
   f. Lake and stream restoration opportunities
   g. National Wetland Inventory for the Reservation is out of date
   h. Specific wetland water quality standards needed
   i. Development of wetland biological assessment methods and monitoring
   j. Identification and evaluation of degraded wetlands
   k. Establishment of a wetland mitigation bank
   l. Establishment of a Clean Water Act Section 404 permit program
   m. Restoration of sweet grass habitat
   n. Evaluate extent and condition of cedar swamps
   o. Establishment of a project to monitor and control wetland invasive plants
   p. Development of a Storm Water Ordinance
4. Fisheries
   a. Routine monitoring of the fisheries and habitat
   b. Restoration of lost/declining fisheries
   c. Mercury and other heavy metals in contaminated fish
   d. Spread of exotics
   e. Increase harvest opportunities
5. Land Resources
   a. Less than 1/3rd of land within Reservation is owned by Fond du Lac
   b. Approx. ½ of Fond du Lac Reservation covered by wetlands, drainage areas, streams or lakes
   c. Much of Reservation is undeveloped forest and lowlands
   d. Land Use Ordinance now regulates tribal and member owned fee lands
   e. Protecting cultural/historical sites, hunting and sugarbush land, and lake shore and stream bank areas
6. Forestry
   a. New Logging Enterprise may influence forest management by increasing the pressure on the resource
   b. Significant ash decline
   c. Allotment ownership is highly fragmented – management challenges
   d. Protection of sacred/archeological sites
   e. Soil compaction
   f. No road and trail policy
   g. Invasive plant and insect species
   h. Birch decline

7. Wildlife
    a. Emphasis on game species and promote game populations
    b. Hunting and gathering rights under Treaties of 1854 and 1837
    c. Wildlife for subsistence and recreation
    d. Good wildlife populations, habitat, and public access for hunting and trapping
    e. Final stage of 1854 Treaty case regarding how Fond du Lac Band members can exercise their rights has not been settled
    f. Decline of youth participation rates in outdoor oriented activities
    g. Hunter harvest, land management practices, other human and natural trends affect wildlife populations
    h. Nongame and protected wildlife are not given much attention, but are probably important to Band members
    i. Climate change effect on northern species
    j. Tribal wildlife resource and demand will not remain static
    k. Current resources devoted to wildlife program are inadequate
8. Air Quality
    a. Operation of existing monitoring activities
    b. Tribal Air Authority/Tribal Implementation Plan
    c. Determine need for Class 1 Resignation
    d. Policy participation
    e. Outreach activities
9. Conservation/Enforcement
    a. Lack of adequate space for current staff offices
    b. Coordinate with State of Minnesota on enforcement for non-Indians in 1837 and 1854 Ceded Territories
    c. Training
    d. New rules and regulations proposed for Conservation Code
    e. More Conservation Enforcement Officers and equipment needs
10. Recreational Resources
    a. Recreational trails
    b. ATV use
    c. Land ownership
    d. Recreation area management
    e. Lack of recreational facilities
11. Energy Resources and Management
    a. Energy audits
    b. Cost of energy efficient upgrades
    c. Tribal utility feasibility
    d. Future energy and liquid fuel supply
    e. Utilize access to the petroleum pipelines on the Fond du Lac Reservation
12. Waste Management and Hazardous Substances
    a. Solid waste storage
    b. Solid waste disposal
    c. Recycling
    d. Proper transport of solid waste
    e. Abandoned/decrepit mobile trailer homes
    f. Open burning of trash

g. Demolition debris management
h. Hazardous waste management
i. Illegal dumping
j. Storage of junk vehicles
k. Disposal of medical waste
l. Salvage yard operations
m. Managing problem/specialty waste items
n. Enforcement

GOALS (identified as preferred program direction alternatives in the plan) (# links to issue)

1. A Tribal Historical Preservation Office (THPO) will be employed to better meet requirements of Section 106 (1); Historical and cultural resources are protected for the benefit and knowledge of future generations (5).
2. Improve wild rice harvest by conducting monitoring and restoration in the Ceded territories (2).
3. Pursue additional regulatory authority under the Clean Water Act to assert tribal sovereignty on Reservation. Prioritize Big Lake community wastewater project for funding. (3).
4. Improve and increase fish population assessments both on the Reservation and within both the 1854 and 1837 Ceded Territories, with the goal of adding harvest opportunities (4).
5. Natural resources are of a high quality, offering land for sustainable levels of traditional hunting, fishing, and gathering activities within naturally functioning, viable ecosystems (5).
6. Ecological silviculture will be used to guide forest management decisions. A limited harvest zone will be established within a ¼ mile of the wild rice lakes and ¼ mile of the St. Louis River (6).
7. Increased staffing with additional skilled positions will allow the Wildlife Program to address more of the needs and opportunities for wildlife in the two Ceded Territories and on the Reservation (7).
8. Add toxics monitoring and additional stations to better monitor air quality for members' health (8).
9. Enhance work space to improve efficiency and morale of staff (9).
10. Establish a recreation program with emphasis on motorized and non-motorized trails. Establish regulations for motorized trail use (10).
11. Expedite Fond du Lac's Strategic Energy Plan and capital development project (11).
12. Develop a new waste facility on or off-Reservation and implement curbside pickup for Fond du Lac households (12)

** No preferred alternatives were identified for Land Resources. This resource is currently under the direction of the Land Use Committee and the Planning Division, which operates under a separate Land Use Plan.

STRATEGIES (Stated as objectives in the plan) (#'s link to Goal/ Preferred alternatives)

1. Implementing new Land Use Ordinance for Cultural Preservation sites (1).
2. Cooperating with other tribes on cultural resources (1).
3. Create a Tribal Historic Preservation Office under 106 of the National Historic Preservation Act (1).

4. At a minimum, maintain the current program and management (2).
5. Increase vegetation treatment acreage per annum (2).
6. Increase funding levels for investment in additional equipment, personnel, and training to maximize management identified in opportunities section (2).
7. Improve the mapping and monitoring of water levels on resource lakes and increase water level management activities (2).
8. Continue to protect ground water/drinking water resources of the reservation (3).
9. Continue with current water quality data monitoring programs (3)
10. Develop nutrient and biological criteria for surface waters (3).
11. Update Reservation-specific fish consumption guides (3).
12. Successfully conduct and operate a wastewater collection and treatment system for the Big Lake community (3).
13. Continue to implement the tribal non-point source management plan (3).
14. Complete and implement the Stony Brook Watershed Management Plan (3).
15. Seek funding to implement lake and stream restoration projects (3).
16. Continue to actively participate in environmental review and permitting for mines upstream (3).
17. Continue to press for mercury emissions reductions at state and national level (3).
18. Develop shoreline protection guidelines for development occurring on Reservation lakes (3).
19. Delineate zones of protection for community water systems on the Reservation (3).
20. Continue to seal abandon drinking water wells to protect aquifers (3).
21. Continue administration of the Wetland Protection and Management Ordinance; revise the ordinance as needed (3).
22. Continue application efforts for Treatment in the same manner as a State for the Wetlands Regulatory Program (3).
23. Assume Clean Water Act Section 404 permit authority on the Reservation (3).
24. Develop a Comprehensive Wetland Assessment and Monitoring Plan; implement and maintain the plan (3).
25. Develop a comprehensive wetland restoration and mitigation banking plan (3).
26. Develop, gain Reservation Business Committee approval, and implement a Storm Water Ordinance (3).
27. Begin application efforts for Treatment in the same manner as a State for a Storm Water Regulatory Program (3).
28. Assume Clean Water Act Section 402 permit authority on the Reservation (3).
29. Increase staff to allow proper separation of regulatory review and project development assistance (3).
30. Develop a long-term database for the fisheries of the Fond du Lac Reservation and the 1854 and 1837 Ceded Territories so that management decisions can be based upon current data (4).
31. Perform regular assessments of the fisheries and aquatic habitat to build long-term data sets (4).
32. Cooperate with and coordinate activities with other agencies (MN DNR, 1854 Treaty Authority) (4).
33. Identify fish stocks and populations that might benefit from supplemental stocking or reintroduction (4).
34. Provide greater harvest opportunities (4).

35. Initiate off-Reservation spearing and netting activities in the 1854 Ceded Territory (4).
36. Monitor increased harvest to prevent any over-exploitation of stocks (4).
37. Develop a cost-benefit analysis of a new fish hatchery for lake sturgeon (4).
38. Birch management and forest development projects will increase significantly (6).
39. Use of all-aged management where appropriate, especially with Northern Hardwoods (6).
40. Reintroduce tree species that are not well represented in their ecological niche (e.g. white pine, red oak, yellow birch) (6).
41. Manage most timber types on a biological rotation age not an economic rotation age (6).
42. Emphasize management for wildlife and traditional uses of forest products (sugar bush, bark, and berry gathering) (6).
43. Guide the forest into a pre-European settlement species composition (6).
44. Manage forest resources in a manner that produces a healthy forest (6).
45. Design timber sales to enhance wildlife habitat and diversity (6).
46. Design forest development projects to enhance wildlife habitat and diversity (6).
47. Where appropriate, reintroduce fire (6).
48. Visual best management practices will be utilized when practiced near areas of special concern such as lakeshore, home sites, and parks (6).
49. Identify potential limited access areas for the protection of cultural, recreational water and wildlife features (6).
50. Identify and maintain special use areas such as sugarbush camps and areas for gathering of sacred and natural plants (6).
51. Follow the St. Louis River Plan (6).
52. Reduce fire risks in Urban Interface (6).
53. Reduce fuel loading by prescribed fire or mechanical treatment (6).
54. Public education (6).
55. Prepared for wildfires during fire season (6).
56. Locate housing in less fire prone areas (6).
57. Maintain abundant populations of game species, water fowl and furbearers (7).
58. Coordinate with other Fond du Lac Resource Management Division programs, other state, county and federal agencies and private landowners to create and take advantage of opportunities to develop and implement wildlife habitat projects for game species, waterfowl and furbearers (7).
59. Collect and analyze hunter and trapper harvest data for trends and reporting purposes (7).
60. Continue and expand population survey data for game species, waterfowl and furbearer species (7).
61. Help the Band develop and implement sound conservation strategies for all wildlife species (7).
62. Work with law enforcement and committees to develop and implement seasons and bag limits and other harvest strategies to ensure long-term resource protection (7).
63. Obtain higher priority in Reservation land management and natural resource decision making for wildlife species (7).
64. Take more active role with other agencies and private land owners to ensure quality and quantity of wildlife habitat is not depleted (7).

65. Target wildlife research in ways that will improve understanding of wildlife populations and their relationship with habitat and improve tribal wildlife management capabilities (7).
66. Ensure that treaty rights and the recreational and subsistence needs of Band members are met (7).
67. Coordinate and liaison with committees and programs, fed and state agencies, and legal representatives to ensure that plentiful opportunities are maintained and developed for Band members (7).
68. Coordinate with divisions and division programs to ensure quality and quantity of wildlife habitat and wildlife populations are not depleted (7).
69. Promote opportunities to recruit and retain tribal youth into hunting, trapping and other wildlife related activities (7).
70. Continue sample collection and site maintenance (8).
71. Continue data compilation and analysis (8).
72. Decide whether to maintain monitoring level, add monitors, or remove monitors (8).
73. Make policy and permitting recommendations based on monitoring data (8).
74. Provide any additional information to EPA staff to aid their review of the Tribal Implementation Plan (8).
75. Draft tribal air quality regulations/ordinances (8).
76. Pursue tribal minor source permitting program (8).
77. Hold public hearings and obtain Reservation Business Committee approval for tribal regulations/ordinances (8).
78. Inform Reservation Business Committee on Class 1 options (8).
79. Consider the adequacy of Reservation air quality standards alone to maintain good air quality (8).
80. Identify Air Quality Related Values for the Reservation (status and vulnerability) without divulging sensitive information (8).
81. Determine the exposure of Air Quality Related Values to air pollution (8).
82. Develop criteria to evaluate the level of adverse impacts on Air Quality Related Values (8).
83. Consider application to the EPA to change air quality status from Class II to Class I (8).
84. Review Federal Register listings (8).
85. Participate in conference calls to obtain information on proposed rules, write and submit comments as needed (8).
86. Attend meetings and conference calls for other policy groups as needed (8).
87. Educate Band members about the importance of good air quality and the effects of climate change (8).
88. Organize giveaways of seedlings or compact fluorescent bulbs to fight climate change and educate the public (8).
89. Other areas of special interest may include smoking cessation, good vehicle maintenance, efficient wood burning, and discouraging the use of burn barrels (8).
90. Develop a plan to increase the working space for Conservation Officers (9).
91. Create one Office Administrator/Records position to improve the departments' and officers' administrative record keeping (9).
92. Enforcement of ordinances, regulations, and rules in the 1837 and 1854 Ceded Territories, with consideration given to environmental protections such as water quality

standards, wetland fill concerns, wellhead protections, pesticide use regulations, and air quality standards on the Reservation (9).

93. Many of these rules, regulations and ordinances are currently under civil jurisdiction, but should also be enforceable in the tribal court system (9).
94. Draft a Tribal energy vision, mission and goals (11).
95. Survey existing energy use and the potential for resource development (11).
96. Develop an action plan to achieve the energy goals (11).
97. Inventory vehicle fleet (11).
98. Current miles per gallon and potential fleet options to increase miles per gallon (110.
99. Alternative fleet options (11).
100. Action plan to achieve the goal (11).
101. Hire full time Energy Project Manager (11).
102. Form an Energy Committee (11).
103. Analyze energy regulatory capacity (11).
104. Establish a Fond du Lac-owned distribution utility (11).
105. Identify potential wind turbine sites and suppliers (11).
106. Wind turbine production estimates (11).
107. Identify permits and requirements for wind turbine construction (11).
108. Identify wind energy disposition options (11).
109. Wind energy project development economic analysis (11).
110. Site analysis for potential solar photovoltaic and thermal systems (11).
111. Develop recommendations for building (11).
112. Develop a capital development plan (11).
113. Procure funding for a new Resource Management Building (11).
114. Work with Minnesota Power and natural gas vendor to collect baseline billing profiles (11).
115. Conduct site visits to gather electricity, heating and water heating information on each building (11).
116. Enter and analyze data for model buildings load and peak demand (11).
117. Meet with Tribal representatives about building efficiency and utility needs (11).
118. Evaluate equipment needs for chipping and hauling of biomass slash (11).
119. Commission and monitor of biogas installation (11).
120. Provide a report to the Reservation Business Committee detailing installation and operating concerns (11).
121. Waste reduction: expand current educational food waste vermin-composting project at the tribal school into yard waste composting as a way to provide nutritional soil supplement for gardeners, and as a way to help the environment. Other waste reduction efforts include reduced packaging, increased reuse of materials and outreach efforts (12).
122. Waste education: Community education will have a prominent role in the Fond du Lac Reservation's waste reduction, recycling, composting, household hazardous waste, solid waste processing, and other waste programs (12).
123. Continuation of recycling programs initiated in 1995 and continued relationships with private waste haulers that service the residents and businesses on the Reservation. One major objective is to increase recycling participation among members (12).
124. Waste planning: Continue participation in federal, regional, local, and tribal planning efforts (12).

3. DNR - Boarder Lakes Subsection Forest Resources Management Plan: Strategic Direction and Stand Selection Results Final

Document Title	Source	Date	URL or Address
Border Lakes Subsection Forest Resources Management Plan: Strategic Direction and Stand Selection Results Final	Minnesota Department of Natural Resources	2005	www.dnr.state.mn.us/forestry/subsection/borderlakes

Geographic Extent / Scope: The Border Lakes subsection unit is approximately 2.8 million acres. It averages about 30 miles in width as it stretches 180 miles along the Canadian border from just east of International Falls to north of Grand Portage. Orr, Tower, and Ely are within the subsection.

Organizations / Agencies involved in plan creation: An interdisciplinary team of DNR Forestry, Fish and Wildlife, Ecological Services, and other division's staff had primary responsibility for developing the subsection plan. Managers of adjacent county, federal, tribal, and industrial forest lands were invited to provide information about the condition of their forest lands and future management direction.

Info on Planning Process: Description of 5 step process (Initiating the Planning Process; Assessment and Issue Identification; Strategies, DFFC (Desired Future Forest Condition), and Stand Selection Criteria: Draft List of Stands to be Treated and New Access Needs; Final Plan). Public identified and notified, and comments from public a part of the drafting process. See 1-3 for chart of steps and details.

Purpose of plan: A 'Subsection Forest Resource Management Plan' (SFRMP) is a DNR plan for vegetation management on forest lands administered by the DNR Forestry and Wildlife divisions. Vegetation management includes actions that affect the composition and structure of forest and brush lands, such as timber harvesting, thinning, prescribed burning, and reforestation. The geographic area covered by this plan is a subsection rather than administrative area such as county or DNR administrative area. Key products of the planning process: (1) Desired future forest composition goals and (2) List of DNR stands to be treated over a ten-year period.

VISION(S)

None identified.

Final issues, goals, and strategies are broken down into two categories:

A: Providing for a sustainable harvest.

B: Management of forest-related habitats.

A. Issues, goals, and strategies related to Providing for a sustainable harvest.

ISSUES (Issues)

1. What is the appropriate timber harvest level on state lands with consideration of sustainability of all forest resources?

2. Should there be more intensive forest management on some forest lands to increase timber productivity? If so, what are the appropriate methods?
3. How can the DNR best provide access to the stands identified for management during the 10-year plan period?

GOALS (General Direction Statements) (# links to issue)

1. State forest lands in the subsection provide a sustainable timber harvest level, which considers current and future ecological, economic, and social needs (1).
2. Timber productivity on state forest lands is increased through more intensive management on some lands (2).
3. Access is provided for management of state forest lands while protecting or minimizing negative effects on other forest resources (3).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Integration of strategies for all the issues (1).
2. Harvest stands closer to the recommended rotation age (2).
3. Evaluate high-risk and decadent stands (2).
4. Increase the use of intermediate stand treatments (2).
5. Convert stands of low-site-quality birch and aspen to conifers (2).
6. Maximize soil impacts to protect long-term site productivity (2).
7. Control forest insects and diseases as appropriate (2).
8. Manage some ERF stands for large sawtimber (ERF not explained in document but think it refers to older forests) (2).
9. Continue maintenance of state forest roads classified as system roads (3).
10. Follow policies and guidelines for natural resource management access routes (3).
11. Cooperate with other landowners in forest road planning (3).
12. Complete a timber access transportation plan (3).

B. Issues, goals, strategies related to <u>Management of forest-related habitats.</u>

ISSUES (Issues)

1. What is the appropriate habitat mix, including species composition and distribution, structural characteristics, patch sizes, and age distribution, necessary to provide for the full spectrum of wildlife species (endangered, threatened, and special concern species; game species; and nongame species)? How should state lands be managed to contribute to this mix?
2. Are additional riparian management recommendations needed to maintain and enhance habitats and connective corridors for wildlife and aquatic species?
3. How do we maintain native plant communities, ecological processes, and biodiversity when managing forest vegetation? Which plant communities and processes are at risk? How will genetic diversity, and rare plants, animals and native plant communities be protected?

GOALS (General Direction Statements) (# links to issue)

1. Acres of upland conifer cover types in the subsection have increased (4).
2. More acres of the upland brush cover type are identified in the subsection (4).
3. Species diversity within stands has increases, especially in mixed conifer/hardwood stands, and structural diversity has been maintained or increased (4).

4. Age diversity within conifer and hardwood stands has increased, especially in white pine stands (4).
5. Even-aged managed forest cover types have a balanced age-class structure (4).
6. State lands have more old pine and other conifers (4).
7. Old forest component is retained on state lands (4).
8. Average patch size is larger (4).
9. Connectivity between patches is maintained (4).
10. Some large old patches are maintained across the subsection (4).
11. Patches are distributed in a range of sizes and ages (4).
12. Patches are representative of the cover types in the subsection (4).
13. Water quality is protected and natural processes are allowed to occur (5).
14. Rare and sensitive species and plant communities are protected (6).
15. Genetic variability of tree species is retained (6).
16. Ecological processes and biodiversity are protected when managing forest vegetation (6).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Allow natural succession of some aspen, birch, and balm of Gilead stands to conifers (1, 16).
2. Convert some aspen, balm of Gilead, and birch stands to conifers (1, 16).
3. Manage for understory white pine and white cedar (1, 16).
4. Use selective harvest favoring conifer regeneration on appropriate sites (1, 16).
5. Use uneven-aged management to favor conifer regeneration (1, 16).
6. Reserve conifer seed trees during harvest or site preparation operations (1, 3, and 16).
7. Use timber harvest systems that protect advance conifer regeneration (1, 3, 16).
8. Use prescribed fire (1, 3, 7, 11, and 16).
9. Time harvest to take advantage of conifer natural seeding opportunities where desirable (1, 16).
10. Do a better job of identifying upland brush cover types in the DNR forest inventory (2, 16).
11. Map upland brush types large scale enough to make a stand of five acres or more in the cooperative stand assessment (CSA) forest inventory (2,16).
12. Recognize that upland brush in small patches (inclusions) is often a stand component of other cover types (2, 16).
13. Maintain existing upland brush cover types (2, 16).
14. Primarily use uneven-aged management in white pine, lowland hardwoods, ash, northern hardwoods, cedar, and on a portion of mixed white spruce and balsam fir cover types (3,16)
15. Use the MFRC voluntary site-level forest management guidelines designed to maintain a diversity of tree species and structural diversity within a stand (3, 16).
16. Retain tree species diversity and structural diversity within stands when thinning stands or applying other selective harvest prescriptions (3, 16).
17. Allow some stands to regenerate to the next successional species (3, 16).
18. Use measures to reduce herbivory effects on plant diversity (3, 16).
19. Increase the white pine component on suitable sites in other cover types (3, 16).
20. Increase the upland cedar, oak, yellow birch, and tamarack component on suitable upland sites through silvicultural practices and artificial regeneration (3, 16).
21. Manage plantations to resemble natural stands (3, 16).
22. Maintain some lowland black spruce, jack pine, and red pine as pure stands (3, 16).

23. Use uneven-aged management to develop multi-aged conifer stands (4, 16).
24. Use uneven-aged management in lowland hardwoods, ash, and northern hardwoods cover types (4, 16).
25. Select ERF stands from a variety of age classes (5, 16).
26. Manage for multi-aged and multi-layered stand structure (6, 16).
27. Manage some lowland mixed-conifer stands as all-aged stands beyond age 160 (6, 16).
28. Maintain an adequate representation of cover types in ERF (7, 16).
29. Manage riparian areas so they are composed primarily of older forest (7, 16).
30. Allow some stands to succeed to other forest cover types without harvest (7, 16).
31. Use riparian corridors and existing old forest to enlarge large old patches (8, 16).
32. Restore or maintain original stand size in forest management activities (8, 16).
33. Harvest adjacent to other recently harvested sites to increase the size of young patches (8, 16).
34. Use selective harvest on some stands to retain old forest patches (8, 16).
35. Work with the MFRC Northeast Regional Landscape Committee to coordinate patch management with other landowners in the subsection (8, 16).
36. Reserve areas from timber harvest (8, 16).
37. Use riparian corridors and existing old forest to connect large old patches (9, 16).
38. Manage some large patches as ERF (10, 16).
39. Establish definitions and goals for patches (11, 16).
40. Plan harvest across a range of timber sale sizes (11, 16).
41. Increase the percentage of upland conifer cover types in large and medium patches (12, 16).
42. Manage for ERF in most riparian areas (13, 16).
43. Favor balsam fir, white pine, white spruce, and cedar in upland, low-fire-frequency areas (13, 16).
44. Favor red pine, aspen, birch, and jack pine in upland, high-fire-frequency areas (13, 16).
45. Favor ash, elm, maple, yellow birch, black spruce, tamarack, and cedar in forested lowlands (13, 16).
46. Apply Shipstead-Newton-Nolan Act and Little-Shipstead-Newton-Nolan Act restrictions where applicable (13, 16).
47. Apply the MFRC voluntary site-level forest management guidelines (13, 16).
48. Maintain adequate shading along designated trout streams (13, 16).
49. Protect old-growth plant communities (14, 16).
50. Identify and protect EILC sites (14, 16).
51. Begin the Minnesota County Biological Survey (MCBS) in the subsection (14, 16).
52. Reference the Natural Heritage database during stand selection (14, 16).
53. Employ Field Guide to the Native Plant Communities of Minnesota: The Laurentian Mixed Forest Province (14, 16).
54. Protect sensitive and high-quality native plant communities and species (14, 16).
55. Use appropriate seed sources (15, 16).

4. DNR - Mille Lacs Uplands Subsection Forest Resources Management Plan: Strategic Direction and Stand Selection Results Final

Document Title	Source	Date	URL or Address
Mille Lacs Uplands Subsection Forest Resources Management Plan: Strategic Direction and Stand Selection Results Final	Minnesota Department of Natural Resources	2008	www.dnr.state.mn.us/forestry/subsection/millelacs

Geographic Extent / Scope: The Mille Lacs Uplands planning area is approximately 3,498,533 acres. More than 357,000 acres of that area (about 10 percent) is administered by state agencies, mainly the Forestry and Wildlife Divisions of Minnesota Department of Natural Resources (DNR). Portions of three Ecological Classification System (ECS) Subsections are included. The majority of the land area is in the Mille Lacs Uplands, a small amount is in the Glacial Lake Superior Plain, and a tiny portion is in the St. Croix Moraines Subsection. Approximately 40 percent of the Mille Lacs Uplands and 66 percent of the GLSP is forested.

Organizations / Agencies involved in plan creation: An interdisciplinary team of DNR Forestry, Fish and Wildlife, Ecological Services, and other division's staff had primary responsibility for developing the subsection plan. Managers of adjacent county, federal, tribal, and industrial forest lands were invited to provide information about the condition of their forest lands and future management direction.

Info on Planning Process: Description of 5 step process (Initiating the Planning Process; Assessment and Issue Identification; Strategies, DFFC (Desired Future Forest Condition), and Stand Selection Criteria: Draft List of Stands to be Treated and New Access Needs; Final Plan). Public identified and notified, and comments from public a part of the drafting process. See 1-3 for chart of steps and details.

Purpose of plan: A 'Subsection Forest Resource Management Plan' (SFRMP) is a DNR plan for vegetation management on forest lands administered by the DNR Forestry and Wildlife divisions. Vegetation management includes actions that affect the composition and structure of forest and brush lands, such as timber harvesting, thinning, prescribed burning, and reforestation. The geographic area covered by this plan is a subsection rather than administrative area such as county or DNR administrative area. Key products of the planning process: (1) Desired future forest composition goals and (2) List of DNR stands to be treated over a ten-year period.

VISION(S)

None identified.

Final issues, goals, and strategies are broken down into four categories.

A: Desirable future forest conditions.

B: Forest spatial patterns.

C: Timber productivity.

D: Public Involvement and collaboration.

**Interwoven into most of the issues is recognition of the value of maintaining and enhancing biological diversity in the subsection in order to increase the resilience of the forested landscape (i.e., its resistance to disease and disturbance and ability to provide a variety of resources (3-1).

A. Issues, goals, and strategies related to Desirable future forest conditions.

ISSUES (Issues)

1. Age-class structure
2. Vegetation diversity
3. Wildlife habitat diversity
4. Ecologically significant areas

GOALS (General Direction Statements) (# links to issue)

1. Forests in the Mille Lacs Uplands, Glacial Lakes Superior Plain, and St. Croix Moraines (planning area) are diverse in age and structure and there are both older and young, regenerating forests (1).
2. At least 10 percent of lands administered by the Divisions of Forestry and Wildlife in the planning area are managed as older forests (1).
3. ERF (extended rotation forest) areas are located where they will provide the desired timber quality and old forest attributes.
4. Native plant communities that were historically well represented in the planning area are well represented today (2).
5. Benefits derived from efforts to regenerate forests after harvest are maximized (2).
6. The amount of white pine in the subsection has increased by 100 percent over 2002 levels. Note: Historically, white pine most often occurred as a component in other forest types rather than as a pure type. It is most successfully introduced in stands with some residual overstory**;** therefore, reaching this goal may not actually effect a significant change in the number of acres of white pine cover type. (2)
7. The amount of white cedar in the subsection has increased over 2002 levels; an improved age-class structure indicates greatly improved regeneration success (2).
8. The birch cover type has increased by 50 percent over 2002 levels and shows a greatly improved age-class distribution (2).
9. Healthy butternut specimens on state and private lands are protected pending the development of trees resistant to butternut canker (2).
10. The aspen cover type is reduced by 5 percent from 2002 levels by selective removal of aspen to favor an existing species, natural stand conversion through succession, replanting, or underplanting with another species (2).
11. Specific areas are managed to maintain open landscapes needed to maintain populations of species of management concern (2).
12. State Nurseries have access to sources of seed and other propagation materials from a variety of environments. The sources are identified and protected in the course of forest management (2).
13. The oak type (red oak, bur oak, and white oak) has increased slightly (2 percent) over 2002 acreage. Oak stands are managed using even-aged or two-aged systems, with even-aged predominant (2).

14. Northern Hardwood stands average sixty to eighty years of age with representatives of all age classes. Stands have between eighty and one hundred forty sq. ft. of basal area, with most being maintained between eighty and one hundred twenty sq. ft. After the year 2122, northern hardwood acres should be equally divided among basal area classes 80-100, 101-120, and 121-140 for perpetuity. *Note: Although the goal is to maintain northern hardwood acres, we may see a slight decrease in acres as some sites that have been identified as low quality hardwood sites are converted to a more suitable cover type for the site.* (2)
15. New infestations of invasive exotic species on public forest lands are rare, and the spread of existing populations is controlled (2).
16. State lands contribute important habitat and population support for the 439 permanent and regular resident wildlife species that exist in Minnesota. Populations for various species are monitored and habitats for game and nongame species are valued and protected (3).
17. Areas of unusual ecological significance are valued and protected as areas for study and conservation of both plant and animal rare species, sources of biological diversity, and ecological benchmarks (4).
18. Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species (4).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Use harvest planning to improve the age class distribution of all forest types in the subsection (1).
2. Designate stands as extended rotation forests (ERF) that include a variety of age classes (1).
3. Include short-lived (early successional) species such as aspen, jack pine, and birch in ERF areas (1).
4. Continue to harvest aspen stands that are classified as "high-risk" due to age, and will be maintained as aspen, at an accelerated rate (1).
5. Model current and future forest age-class distributions for the planning area, annually (1).
6. Ensure that the oldest age classes are present on the landscape in adequate amounts (1).
7. Continue to refine the list of old-growth forests by evaluating and prioritizing within existing old-growth teams (1).
8. Coordinate with the Minnesota County Biological Survey and other programs to identify additional old-growth forests (1).
9. Use ERF designation to buffer impacts to designated old-growth forest (1).
10. Plan timber sale access to minimize undesirable recreational impacts to designated old-growth forests and adjacent special management zones (1).
11. Identify opportunities to locate ERF in specific riparian, corridor, and Wildlife Management Areas, and adjacent to designated old-growth forests (2).
12. Identify some highly productive forest lands for management as ERF, for the production of high quality timber (2).
13. Emphasize early successional species such as aspen, jack pine, and birch in these ERF areas, in addition to typically long-lived (later successional) species (2).
14. Concentrate ERF in areas that have historically supported the oldest forests, and the highest proportion of older forests, in the planning area. Such areas provide site

conditions and have experienced disturbance regimes that allow the development of old forests (2).

15. Categorize each Land-type Association (LTA) (or LTA group) by its ability to develop and maintain older forests (2).
16. Participate in the identification of LTAs that are appropriate for open landscape management; these LTAs may not be the best choices for ERF (2).
17. Consider existing large patches and identified forested corridors as areas of ERF concentration (2).
18. Allocate ERF on two levels (or scales), both of which are below the subsection level:
    a. At the unit or landscape level/LTA level -- at this level historical disturbance regimes are most important (3).
    b. At the stand level -- at this level, existing corridors, riparian zones, and old-growth special management zones are important.
19. Concentrate ERF in areas of the subsection(s) that have historically supported the oldest forests and highest proportion of older forests. Such areas provide site conditions and have experienced disturbance regimes that allow the development of old forests (3).
    a. Identify major disturbance regimes for the planning area.
    b. Plot DNR releves classified by Native Plant Community System (i.e., fire dependent vs. mesic hardwood) and native plant community class.
    c. Use this releve map to help decide where to concentrate ERF.
    d. Create a bearing tree cover for each Land-type Association (LTA) in the planning area and use that to estimate average tree age and age-class distributions for each LTA. Use tree age and age-class distribution information to help inform decisions about how much ERF is desirable and where it should be located.
    e. Continue to work to achieve ERF goals during future planning periods.
20. LTAs provide the best landscape unit for basing decisions on allocation of ERF; in general, these units are homogeneous enough in terms of environmental conditions that each can be categorized by its ability to develop and maintain older forests (3).
21. The Division of Wildlife has identified certain LTAs that are appropriate for brushland management; these LTAs may not be the best choices for ERF (3).
22. Large patches and corridors identified by the SFRMP team's spatial concerns work group should be considered as areas of ERF concentration (3).
23. Identify those species that were historically more common and the native plant communities in which they thrived, and focus regeneration and reintroduction efforts in those areas (4).
24. Place a high priority on efforts to map the occurrence of native plant communities and native plant community systems in the subsection(s) (4).
25. Continue to develop capability to use native plant community and soil data to make decisions about appropriate forest cover types for a site (4).
26. Use native plant community keys to guide forest management decisions in the subsections; there will be a number of options from which to choose on any given site (4).
27. Identify stands most appropriate for conversion to other types using site index, risk criteria, native plant community, and soils data (4).
28. Work to achieve natural regeneration if possible, use artificial regeneration when necessary, and make a commitment to protect regeneration (4).

29. Develop management plans specific to the needs of forest types that have been identified as lacking adequate regeneration (see specific cover-type notes in this document) (5).
30. Engage in routine monitoring and evaluation of regeneration efforts (5).
31. Work closely with Division of Wildlife resource managers to ensure that population goals for wildlife and regeneration plans are not in conflict in a given area (5).
32. Continue to experiment with regeneration strategies that appear less vulnerable to depredation (5).
33. Take every precaution to avoid damage to the site during harvest; this is often at the root of regeneration problems, which are then compounded by faulty regeneration practices (5).
34. Document successes and failures in regeneration efforts in order to avoid repeating errors (5).
35. Protect soils and enhance regeneration by regulating season of harvest when necessary (5).
36. Follow Forest Development Manual (Minnesota DNR, 1994-5) guidelines for harvesting, site preparation, and artificial regeneration to ensure greatest chance of success in artificial regeneration (5).
37. Use Ecosystem Classification System (ECS) field guides to help ensure DNR resource managers make sound decisions in artificial regeneration projects (5).
38. Completely document all species within the project area (all woody species that occupy a site, not just the species of interest) (5).
39. Implement the guidelines provided by Minnesota DNR's *White Pine Management Policy* (Minnesota DNR, 1998) (6).
40. Focus regeneration efforts in areas where white pine was historically abundant in the planning area, where there is a low incidence of blister rust, and where slopes are adequate to permit air drainage (6).
41. Make a commitment to protect natural and planted white pine regeneration in focus areas from depredation; enlist the support of other DNR divisions and volunteers, where possible (6).
42. Identify native plant communities in the subsection that support the growth of upland and lowland white cedar (7).
43. Focus regeneration efforts on areas that have existing white cedar, especially those surrounded by large contiguous patches of forest (7).
44. Continue to refrain from harvesting upland white cedar in the subsection until adequate regeneration is identified or established in focus areas (7).
45. Identify native plant communities in the planning area that support the growth of quality birch (8).
46. Engage in regeneration efforts, including site preparation and planting, if needed to ensure adequate birch regeneration in selected areas, e.g., in gaps created in mixed hardwood stands (8).
47. Ensure that birch inclusions are managed for regeneration (8).
48. Ensure that harvest of decadent birch stands in the subsection be addressed as a high priority to maximize chances for natural regeneration (8).
49. Combine Strategy (48) with post-harvest preparation techniques to improve regeneration (8).

50. Implement the recommendations of current research into sustainable harvest of birch bark from live, standing trees (the subject of ongoing collaborative research by DNR, the Natural Resources Conservation Services, and the Mille Lacs Band of Ojibwe) (8).
51. Continue to implement butternut harvest moratorium on state lands (Minnesota DNR, 1992) (9).
52. Identify stands that can be maintained as mixed aspen and conifers by retaining and enhancing advanced conifer regeneration (10).
53. Identify aspen stands that are "high risk" due to disease and could be converted to another type (10).
54. Use historical records, native plant community, soil, and wind firmness data to determine appropriate conversion, if natural conversion is not apparent (10).
55. Reserve long-lived conifer types as clusters in hardwood stands for seed sources (10).
56. Encourage and nurture natural succession to mixed hardwoods on appropriate sites (10).
57. Collaborate with Divisions of Wildlife and Ecological Services to identify specific open landscapes that will provide the most benefit to associated wildlife species and maintain those areas as non-forest (11).
58. Provide maps of critical open landscape habitat areas for use by those involved in land-use planning efforts (11).
59. Collaborate with other divisions and other landowners to actively maintain open landscapes in designated areas using appropriate management techniques (11).
60. Encourage field personnel to document location of specimens or populations appropriate for use as seed sources. Sugar maple, basswood, white pine, yellow birch, oak species, and bigtooth aspen are of particular interest for use in tree improvement programs (12).
61. Identify and document pure stands of tree species that are easily accessible (12).
62. Use locally adapted seed (12).
63. Manage several stands of trees within a subsection for seed production as a way of maintaining sufficient diversity when the seed is deployed for regeneration (12).
64. Use seed collected from several stands of trees to increase variation among planted or seeded stands (12).
65. Mille Lacs Uplands falls within the Central Minnesota seed zone (Minnesota DNR, 1989). Using seed from this seed zone (even if the seed is from another subsection) has been determined to be appropriate and will further increase genetic diversity among planted or seeded stands (12).
66. When establishing a seed production area, it is important to develop several acres with each acre retaining ten to fifteen trees. This will result in a sufficient number of trees providing ample genetic material to have a good "mix" and sufficient genetic variation. Establishing several seed production areas will increase genetic diversity (12).
67. Avoid thinning and other management when oaks are under severe stress from drought and/or defoliation (13).
68. Examine stands when basal area reaches 120 sq. ft. per acre (13).
69. Thin stands to produce seven to fifteen cords per acre before regeneration harvest (13).
70. Accept other high quality species in wet-mesic communities (13).
71. Regenerate by use of shelterwood harvests, post-harvest timber stand improvement, weeding, and possibly planting to retain oak (13).
72. Evaluate sapling stands for pre-commercial release and thinning (13).
73. Consider using prescribed fire to regenerate oak on dry-mesic communities (13).
74. Re-examine stands on ten to fifteen year intervals (13).

75. Initiate regeneration harvest on sites that meet criteria (13).
76. Consider converting poor sites (SI less than 55) to a more appropriate cover type for the site (13).
77. Thin stands to produce an average of seven cords per acre at harvest (14).
78. Identify low-quality hardwood stands for conversion or rehabilitation using a clear-cut technique (14).
79. Thin better quality northern hardwood stands for long-term stand improvement (14).
80. Complete native plant community classification for each site to assess its potential for future management (14).
81. Continue to develop educational materials that help adjacent landowners recognize exotic species and understand appropriate control methods (15).
82. Balance the need for recreational trails with the risk of introducing exotic species into all public forest areas (15).
83. Understand and communicate the distinction between invasive and non-invasive exotic species (15).
84. Identify wildlife management species for the subsection that represent the various habitat and ecological processes necessary to ensure overall sustainability and viability of wildlife (16).
85. Work with the Divisions of Wildlife and Ecological Services to define which wildlife species can be identified as representative wildlife management species (16).
86. Use wildlife resource assessment information about representative wildlife management species to guide/support forest management decisions concerning: 1) species distribution and population estimates, 2) habitat associations, 3) landscape habitat elements, 4) site level habitat elements, 5) management practices, and 6) monitoring and adaptive management strategies (16).
87. Participate in designation of open landscape complexes to be maintained as habitat for open-landscape-dependent wildlife species (16).
88. Identify and maintain long-lived conifer secondary species in hardwood stands as winter cover (16).
89. Identify and maintain mast species as leave trees on harvest sites (16).
90. Consult the most up-to-date rare features database layer available through the DNR Geographic Information Systems data library (17).
91. Flag stands that include a rare feature element during stand selection (17).
92. Following stand selection, DNR Ecological Services Division will confer with Forestry staff (on Forestry-administered lands) and Wildlife staff (on Wildlife administered lands) to determine adjustments (if needed) in proposed treatments to protect the element occurrence (17).
93. Work with the Divisions of Ecological Services and Wildlife to identify areas of high biological diversity on State land that are not already protected by Scientific and Natural Areas, state Parks, or Wildlife Management Areas, and consider giving them special management to conserve their unique assets (17).
94. Determine the kind of forest resource management that is required to conserve each high biological diversity area, if appropriate (17).
95. Consider including high biological diversity areas in ERF management areas and/or in forested corridor areas, as appropriate (17).
96. Adhere to MFRC voluntary site-level guidelines for trout streams when conducting forest management activities in riparian areas of rivers and streams that contain trout or listed

mussel species and MFRC standard riparian area voluntary site-level guidelines (Minnesota FRC, 1999) in other riparian areas (18).

B. Issues, goals, and strategies related to <u>Forest spatial patterns.</u>

ISSUES (Issues)

1. Connectivity
2. Patch management
3. Fragmentation

GOALS (General Direction Statements) (# links to issue)

1. Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals (1).
2. Forests are managed for a variety of patch sizes. Large, contiguous patches of forest are maintained in designated areas, while other parts of the Mille Lacs uplands are managed for smaller or medium patch sizes (2).
3. Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction (3).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Identify and maintain existing connections between large blocks of forest land (1).
2. Establish a corridor, a minimum of one-quarter mile (1320 feet) in width. This may or may not always be in the same location (1).
3. Manage forests in the designated corridor for a minimum average basal area of 60 sq. ft. per acre. Where the management goal within the corridor is to maintain an even-aged species (aspen, jack pine, red pine, etc.) no more than one-half the width of the corridor may be less than 60 sq. ft. of basal area at any one time (1).
4. Any Division of Forestry-approved management activity that maintains these stand characteristics is acceptable (1).
5. Work with other land managers (federal, tribal, and county) to maintain forest land in the corridor in forested status. This will mean involving them and getting "buy-in" to the concept of establishing a forested corridor (1).
6. Plan subsection timber harvests taking into consideration the desired future distribution of patch sizes (2).
7. Conserve existing large contiguous mature forest areas to provide critical habitat for multiple forest interior species, e.g., red-shouldered hawk nest sites (2).
8. Manage existing large blocks of state forest land, and blocks of state forest land that are adjacent to large blocks on other ownerships, for large patches, giving priority to those areas in Strategy 7, above (2).
9. Continue to use information on historical disturbance regimes to help refine planning for management of large, medium, or small patches (2).
10. Continue to increase the proportion of state forest land managed according to uneven-aged management regimes as a way of achieving a more desirable patch size distribution (2).
11. Manage state forest lands in the planning area to achieve the following distribution of patch sizes (percent of Forestry and Wildlife lands) (2):

a. Very large (640 acres +) 10%
b. Large (250-639 acres) 15%
c. Medium (100-249 acres) 40%
d. Small (40-99 acres) 25%
e. Very small (< 40 acres) 10%

12. Take care to maintain existing patches in the very large and large size categories (2).
13. Plan the fate of new roads and trails prior to construction so that appropriate action can be taken to either maintain them, or obliterate them from the forest (3).
14. It is undesirable to have roads developing in an unplanned way as a result of recreational use of logging trails (3).
15. Follow the DNR State Forest Road Manual (Minnesota DNR, 1994-6) for development of new roads (3).
16. Adhere to Forestry-Wildlife Guidelines to Habitat Management (Minnesota DNR, 1985-2) Roads and Trails section (3).
17. Contact county land departments and other appropriate land managers (e.g., Tribal governments, The Nature Conservancy) to arrange cooperative use of existing roads to keep new road construction to a minimum (3).
18. Provide a draft of road access needs for public review as part of the forest resource planning process (3).

C. Issues, goals, and strategies related to <u>Timber productivity.</u>

ISSUES (Issues)

1. Identification and management of highly productive sites
2. Utilization and marketing of forest resources
3. Increase site-level productivity
4. Improved forestry data management

GOALS (General Direction Statements) (# links to issue)

1. Timberlands in the planning area are highly productive. They produce good quality hardwood and softwood logs for manufacturing and export, as well as a good quantity of pulpwood to supply Minnesota's pulp and paper industries (1).
2. Utilization of species and grades of timber are optimized to maximize the benefits these resources provide (2).
3. Ecosystem classification tools have helped DNR resource managers identify species most likely to be productive on a specific site, as indicated by soil and native plant information (3).
4. Diverse, high-quality mixed hardwood stands are managed by skilled forest managers and selectively harvested by highly trained logging professionals for continuous quality improvement and production of timber, while maintaining forest cover and establishing regeneration (3).
5. Forest inventory data are detailed and current enough to be relied upon in a wide variety of planning and analysis projects. Forestry databases provide a link between generations of forest managers with respect to both strategic and operational decisions that have been made for a specific forested community (4).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Identify areas that are good examples of their type, occur on wind firm soils, can be managed for production of high quality hardwoods, and/or include large contiguous forested patches for wildlife habitat. Consider thinning healthy aspen types in ERF as well as dense hardwoods and conifers to produce quality timber for the future (1).
2. Use Site-Level Guidelines for all activities to ensure that site quality is maintained (1).
3. Increase hardwood-marking efforts as resources allow (1).
4. Use ECS and local knowledge to identify aspen stands that would be appropriate for conversion to mixed hardwoods, and manage these for quality hardwoods using selective harvest and thinning techniques (1).
5. Identify advance regeneration of long-lived conifers in less productive aspen stands, and plan for their conversion to pine, spruce, and fir types (1).
6. Improve production of quality aspen by continuing to harvest high-risk aspen stands that are to be maintained in the aspen type at a high rate, to avoid conversion to other types.
7. Investigate potential for thinning aspen to increase growth and produce high-quality logs on selected sites (1).
8. Use site-level ecosystem classification keys to identify the native plant community type on a given site and make decisions to manage for appropriate forest types. Sites that are managed for appropriate forest types, have good access, and where managers are committed to continuous improvement have the greatest potential for optimizing timber productivity for the present and the future (1).
9. Focus management activities intended to help stands approach their full production potential on sites with fewest conflicting priorities (rare features, old-growth forest, poor access, etc.) (1).
10. Promote the use of lesser-utilized species and identify potential markets for underutilized species to DNR resource managers (2).
11. Communicate changes in wood and non-timber forest product markets to DNR resource managers (2).
12. Use ECS and local knowledge to identify stands that would be appropriate for conversion to mixed hardwoods, and manage these for quality hardwoods using selective harvest and thinning techniques (3).
13. Use ECS keys and historical information to identify sites appropriate for introduction or enhancement of long-lived conifer species (3).
14. Use ECS keys to help identify forest types that may be more productive than those currently on sites that are marginally productive (3).
15. Use innovative silvicultural techniques appropriately to manage for structural diversity and improved timber quality (3).
16. Promote the use of lesser-utilized species and identify potential markets for underutilized species to DNR resource managers (4).
17. Communicate changes in wood and non-timber forest product markets to DNR resource managers (4).
18. Create a priority reinventory list each planning period (5).
19. Support the development and use of databases that include planning elements in addition to inventory elements (5).

D. Issues, goals, and strategies related to <u>Public Involvement and collaboration.</u>

ISSUES (Issues)

1. Forest stewardship planning

2. Collaboration with other landowners
3. Public involvement and review

GOALS (General Direction Statements) (# links to issue)

1. Progress toward the vision for the subsection(s) forest (or DFFCs) is enhanced by engaging nonindustrial private forest landowners, providing a level of consistency across ownerships with regard to forest management in a given landscape unit (1).
2. Minnesota DNR resource managers routinely collaborate with other landowners to develop consistent goals and landscape-level strategic plans (2).
3. Losses due to forest insects and diseases on private and state forest land are minimized, as are the effects of pest management on non-target species (2).
4. The public is involved in forest management planning during designated review periods (3).
5. DNR Forest managers minimize the visual and aural impact of forest management activities on users of state forests, thereby supporting and enhancing multiple-use values of state forest land (3).
6. Forest managers have stakeholder support for employment of a full suite of forest management options as appropriate to reach identified goals (3).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Consider the differences between private and public lands when developing DFFCs for the planning area. A one-size-fits-all future condition statement is not likely to be implemented or result in diverse and resilient ecosystems (1).
2. Develop a concise summary of landscape-level ecological conditions that can be used by stewardship plan preparers to help private landowners understand past, present, and future ecosystems. This will help landowners select realistic management objectives that are compatible with ecological and economic conditions (1).
3. Prepare or revise management prescriptions tailored to conditions in the planning area so that they can be incorporated into Forest Stewardship Plans (1).
4. Continue efforts to coordinate plans and management projects with federal and county land managers. Provide federal, tribal, and county managers the opportunity to participate in developing management plans for state lands. Review and comment on management plans for federal-, tribal-, and county-managed natural resources (2).
5. In counties that have land departments, send copies of annual vegetation management work plans to the county land commissioner to allow coordination of vegetation management and road access projects (2).
6. In counties that do not have land departments, offer to assist county auditors or the county board to develop land management plans for tax-forfeit land that will be retained in county ownership, as time and resources permit (2).
7. When feasible, develop joint contracts (e.g., site preparation, tree planting) on state and county lands to avoid duplication of effort and achieve economies of scale (2).
8. Maintain contact with other resource managers in the planning area and monitor their strategic planning documents as a way of maintaining an awareness of their long and short-term forest management goals (2).
9. Take advantage of opportunities to collaborate with other resource managers as resources allow (2).
10. When planning management activities, always make adjacent landowners aware of the plan and the purpose (3).

11. Maintain awareness of, and respect for, ownership boundaries (3).
12. Clearly mark and post all boundaries with signs where possible (3).
13. Encourage and actively solicit public input into forest management activities such as planning (4).
14. Apply visual quality management guidelines. Be particularly considerate of scenic values in areas classified as most sensitive (e.g., high-use recreational areas, adjacent to recreational lakes and streams, solitude areas) (5).
15. Manage expectations and perceptions by informing and educating stakeholders about the need for and expected impacts of management activities prior to, during, and after the activity (5).
16. Use opportunities to communicate to the public about management options, risks, and benefits as they arise (6).
17. Use historical disturbance regime and range of natural variation data as they become available to help determine appropriate management techniques for landscape areas (6).
18. Document management prescriptions and choices as they are made, to facilitate communication and public education (6).
19. Use pre-treatment monitoring and post-treatment monitoring as learning and communication tools to justify choices and outcomes (6).

5. DNR - North Shore Highlands, Toimi Uplands, and Laurentian Uplands Subsections Forest Resources Management Plan: Step 3 – Draft

Document Title	Source	Date	URL or Address
North Shore Highlands, Toimi Uplands, and Laurentian Uplands Subsections Forest Resources Management Plan: Step 3 – Draft	Minnesota Department of Natural Resources	2004	www.dnr.state.mn.us/forestry/subsection/

Geographic Extent / Scope: The North Shore Highlands, Toimi Uplands, and Laurentian Uplands subsections landscape unit is approximately 2.4 million acres. It covers an area from west of Duluth near Cromwell northeast along the entire length of the North Shore of Lake Superior in Minnesota and northwest to the Iron Range near Aurora and Babbitt.

Organizations / Agencies involved in plan creation: SFRMP team members include DNR forestry, wildlife, ecological services, and other agency staff. These teams have primary responsibility for the work and decision making involved with the subsection plans. Managers of adjacent county, federal, tribal, and industrial forestlands may be invited to provide information about the condition of their forestlands and their future management direction. Data relating to all ownerships is used in the planning process.

Info on Planning Process: Decision-making by the team is through an informed consent process. This document is part of step three of the five step process (Initiating the Planning Process; Assessment and Issue Identification; Strategies, DFFC (Desired Future Forest Condition), and Stand Selection Criteria; Draft List of Stands to be Treated and New Access Needs; Final Plan).

Purpose of plan: A 'Subsection Forest Resource Management Plan' (SFRMP) is a DNR plan for vegetation management on forestlands administered by the DNR divisions of Forestry, Fish and Wildlife, and Trails and Waterways. Vegetation management includes actions that affect the composition and structure of forestlands, such as timber harvesting, thinning, prescribed burning, and reforestation. Previous forest management plans were based on administrative boundaries (e.g., DNR forestry areas). The SFRMPs will also consider the condition and management of forestlands not owned by the DNR, but will only propose forest management direction and actions for DNR lands.

VISION(S)

None identified.

ISSUES (Issues)

1. Biological diversity, forest composition, and spatial distribution
2. Age-class distribution
3. Within-stand composition and structure
4. Wildlife habitat
5. Riparian and aquatic areas
6. Timber productivity

7. Forest pests, pathogens, and exotic species
8. Visual quality
9. Harvest levels
10. Access to state land
11. Cultural resources
12. Disturbance events

GOALS (General Direction Statements) (# links to issue)

1. Old forest is distributed across the landscape (1).
2. Forest cover type composition on stands moves closer to the range of cover type composition that historically occurred within the ecosystems found in these three subsections (1).
3. Patch management in these subsections maintains existing large patches and increases the average patch size on state lands over time, with consideration of natural spatial patterns (1).
4. Habitat fragmentation is managed to minimize the impacts on species that are negatively affected by fragmentation (1).
5. Management of state lands with MCBS sites of statewide biodiversity significance implements measures to sustain or minimize the loss of the biodiversity significance factors on which these MCBS sites were ranked (1).
6. Rare native plant communities are protected, maintained, or enhanced in these subsections (1).
7. Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections (1).
8. Even-aged managed cover types will be managed to move toward a balanced age-class structure (2).
9. ERF stands in even-aged managed cover types will be managed to achieve a declining age-class structure from the normal rotation age to the maximum rotation age (2).
10. State lands include a representation of each of the growth stages that historically occurred in the ecosystems found in these three subsections (2).
11. Young, early successional forest is distributed across the landscape over time (2).
12. Species, age, and structural diversity within some stands will be maintained or increased (3).
13. Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities (3).
14. Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections (4).
15. Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections (4).
16. Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species (5).
17. Forest management on state lands adequately protects wetlands and seasonal ponds (5).
18. Timber productivity and quality on state timberlands is increased (6).
19. Limit damage to forests from insects, disease, and exotic species to acceptable levels where feasible (7).
20. Reduce the negative impacts caused by wildlife species on forest vegetation on state forestlands (7).

21. Forest management on state lands attempts to mitigate global climate change effects on forestlands. Management is based on our current knowledge and will be adjusted based on future research findings (7).
22. Minimize forest management impacts on visual quality (8).
23. The SFRMP treatment level for each cover type moves toward the desired age-class structure of even-aged cover types (both normal and extended rotation forest), and improves the age-structure and timber quality of uneven-aged cover types (9).
24. The harvest of non-timber forest products is managed to provide a sustainable supply for humans while providing for wildlife habitat and biodiversity (9).
25. Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction (10).
26. Cultural resources will be protected on state-administered lands (11).
27. Disturbance events that occur on state land within these three subsections are promptly evaluated to determine the appropriate forest management needed to address the impacts of the disturbance on the landscape (12).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Determine the desired level of effective extended rotation (ERF) for even-aged cover types (1).
2. Prescribe ERF stands within even-aged cover types so that when a balanced age-class distribution is achieved, the desired amount of effective ERF will be provided (1).
3. Target ERF stand selection to enhance old growth, riparian corridors, and patches (1).
4. Manage riparian management zones primarily to reflect old forest conditions (1).
5. Allow some stands to naturally success to long-lived cover types without harvest (1).
6. Managed designated old-growth stands and old forest management complexes (OFMC) according to DNR policy (1).
7. Designate ecologically important lowland conifers according to department direction (1).
8. Follow the MFRC's *Voluntary Site-Level Forest Management Guidelines* to retain components of old forest in even-aged cover types (1).
9. Use silvicultural treatments that retain old forest components in some stands (1).
10. Increase the acres of jack pine, upland black spruce, and long-lived upland conifer cover types on state lands using specific actions (see pg. 3.16 for specific actions) (2).
11. Increase mixed forest conditions in some stands in all cover types (2).
12. Coordinate with the MFRC's Northeast Landscape Committee planning efforts on forest composition goals and objectives (2).
13. Select stands for treatment during development of the 10-year stand examination list that group harvest activities to create, maintain, or enhance large patches (3).
14. During development of the annual stand examination lists, review and revise stands selected for treatment as needed to ensure that harvest activities are groups to create, maintain, or enhance large patches (3).
15. Convert some even-aged managed stands to uneven-aged managed stands to enhance existing uneven-aged managed patches (3).
16. Convert some uneven-aged managed stands to uneven-aged managed stands to enhance existing uneven-aged managed patches (3).

17. When possible, cooperate with other landowners in patch management to maintain existing large patches and increase the average patch size across forestland of multiple ownerships (3).
18. Avoid breaking up larger patches (4).
19. Minimize the fragmenting of habitat with roads and forest access trails (4).
20. Identify opportunities to maintain existing and potential connections between larger patches when developing 10-year stand examination list (4).
21. Leave live trees and snags within most even-aged managed timber harvests to mitigate the effects of habitat fragmentation (4).
22. Restore or maintain original stand size in forest management activities (4).
23. Determine which MCBS sites are of greatest concern or importance for SFRMP planning over the 10-year planning period (5).
24. Consider the broader context and significance of the MCBS site as a whole when assigning management objectives and selecting stands for treatment (5).
25. Determine location and composition of stand conversions based on NPCs (5).
26. Allow some stands to succeed naturally to long-lived conifer communities (5).
27. Strive to emulate the within-stand composition, structure, and function of older vegetative growth strategies (VGSs) when managing some stands (5).
28. Apply variable density techniques during harvest or reforestation (5).
29. Apply variable retention techniques during harvest (5).
30. Designate some stands as ERF to provide old forest conditions (5).
31. Maintain or increase within-stand species, age, and structural composition that are moving toward the mix and proportion of species found in the native plant community appropriate to that site (5).
32. Whenever possible and practical, manage stand cover type conversions with less intensive site preparation or plantations with less intensive timber stand improvement (tsi) (5).
33. Increase the use of prescribed fire as a silvicultural technique in managing fire dependent NPCs (5).
34. Locate roads to minimize fragmentation of a MCBS site (5).
35. Emulate natural disturbance conditions in large patch management (5).
36. Apply special management recommendations for known rare features (5).
37. Defer management of some stands for further assessment (e.g., EILC and nominated natural areas) (5).
38. Consider timber productivity when managing stands in these MCBS sites (5).
39. Provide an opportunity for further input by the divisions into the management of stands during the annual stand examination list review (5).
40. Forestry, Wildlife, and Ecological Services staff will communicate with other landowners, as opportunities arise, to inform them of the significance of these MCBS sites and management options that could be implemented to address the biodiversity objectives of these MCBS sites (5).
41. Complete the Minnesota County Biological Survey (MCBS) and document known locations of NPCs with a statewide rank of critically imperiled (S1) or imperiled (S2), and those NPCs with S-Ranks of S3 to S5 that are rare or otherwise unique in these subsections (6).

42. Manage known locations of critically imperiled (S1) or imperiled (S2) NPCs and those NPCs that are rare statewide or with limited occurrences in these subsections to maintain their ecological integrity (6).
43. During the development of the 10-year stand examination list and during annual stand review, stands with known locations of critically imperiled (S1) or imperiled (S2) NPCs and those NPCs with S-Ranks of S3 to S5 that are rare or otherwise unique in these subsections will be identified by Ecological Services staff (6).
44. Provide current rare features database (Natural Heritage Information System) to DNR staff through the DNR Quick Themes in ArcView (7).
45. Incorporate new rare features inventory information as the Minnesota County Biological Survey is completed in these subsections (7).
46. Select some ERF, OFMC, and EILC stands based on their association with rare features (7).
47. During the development of the 10-year stand examination list and annual stand examination lists, land managers check the rare features database and flag those stands proposed for treatment that includes a rare feature for follow-up consultation (7).
48. Harvest prescriptions, access plans, and other management proposals identify and implement measures that protect rare features (7).
49. Target the selection of stand treatment acres to the appropriate age classes (8).
50. Prescribe ERF stands within even-aged managed cover types so that each age class will be represented to produce a sustainable amount of old forest over time (9).
51. Target ERF stand treatment acres to the appropriate age classes to move toward the declining age-class structure after normal rotation age (9).
52. Provide representations of growth stages in the desired age-class distributions (goals 1, 8, 9 and 11) and through the forest composition goals (2) for these subsections (10).
53. Strive to emulate the within-stand composition, structure, and function of older growth stages when managing some stands (GDS-3A and 3B and Chapter 4) (10).
54. Consider the contribution of non-timberland cover types (e.g., stagnant conifer types), inoperable stands, and reserved areas (old growth, SNAs, state parks) in providing representations of growth stages (10).
55. Coordinate with the MFRC's Northeast Landscape Committee planning efforts on forest composition goals and objectives (10).
56. Move aspen, balm of gilead, paper birch, and jack pine cover types toward a balanced age-class structure (8, 11).
57. Increase the treatment level for the paper birch cover type (11). (GDS-9A)
58. Regenerate most paper birch harvest sites to well-stocked young paper birch stands (11).
59. Maintain young, early successional forest in a variety of patch sizes to provide habitat for the associated species (11).
60. Use selective harvesting to encourage diversity of species, ages, and stand structures within stands of white pine, lowland hardwoods, ash, northern hardwoods, and some stands of cedar, red pine, and white spruce (12).
61. Implement the MFRC's *Voluntary Site-Level Forest Management Guidelines* designed to maintain a diversity of tree species within a stand (12).
62. Use the NPC Field Guide, site index, and soils data to aid in determining the species composition and structure most appropriate for the site (12).
63. Retain tree species, stand structure, and ground layer diversity within stands when prescribing timber stand improvement and thinning activities (12).

64. Reserve seed trees in harvest and site preparation areas where possible (12).
65. Use harvest systems or methods that protect advanced regeneration. Retain conditions that favor regeneration and understory initiation (12).
66. Increase and/or maintain by reserving from harvest, target species including white pine, white spruce, upland cedar, oak, yellow birch, and upland tamarack as a component within appropriate cover types. Silvicultural practices that may add or increase the presence of these target species will include planting, inter-planting, and artificial or natural seeding (12).
67. Manage planted and seeded stands to represent the array of plant diversity (12, 17).
68. Use ERF in some even-aged management stands to encourage greater structural diversity (12).
69. Encourage fruit and mast-producing species (12).
70. Train field staff in the use of the *Field Guide to the Native Plant Communities in Minnesota: The Laurentian Mixed Forest Province* and native plant community classification stands to NPC (13).
71. Provide old forest distribution across the landscape (14, 15).
72. Provide young forest distributed across the landscape (14, 15).
73. Provide a variety of patch sizes across the landscape that better reflect patterns produced by natural disturbances and attempt to maintain existing large patches. (14).
74. Manage to retain the integrity of riparian areas and provide protection for seasonal and permanent wetlands (14).
75. Provide for the needs of species associated with conifer stands and mixed conifer/hardwood stands (14).
76. Provide for creation and maintenance of within-stand diversity (14).
77. Manage to favor native plant communities and retain elements of biodiversity significance (14).
78. Consider Natural Heritage Program data and other rare species information during development of both the 10-year and annual stand examination lists (14).
79. Apply the DNR management recommendations for habitats of nongame species as described in DNR guidelines and policies. For example:
    a. Provide adequate conditions for gray wolves in the subsections.
    b. Follow guidelines for management around bald eagle nests
    c. Use management that enhances or protects wood turtle nesting sites.
    d. Review the Northern Goshawk Management Considerations (dated 12-03-2004) relating to landscape and site management for the northern goshawk (14).
80. Provide a balanced age-class structure in cover types managed with even-aged silvicultural systems (15).
81. Increase the productivity and maintain the health of even-aged managed cover type stands (15).
82. Provide for the needs of species associated with conifer stands and mixed conifer/hardwood stands (15).
83. Provide for creation and maintenance of within-stand diversity (15).
84. Designate special management areas for the benefit of game species (15).
85. Apply the MFRC's *Voluntary Site-Level Forest Management Guidelines* relating to riparian areas (16, 17).
86. Using the flexibility built into site-level guidelines, determine the appropriate RMZ width and residual tree densities after conducting an on-site evaluation of the RMZ area.

A forester (and other division staff when appropriate) will conduct the evaluation before carrying out any timber harvest activity in riparian areas (16).

87. Manage to maintain or increase old forest in riparian areas (16).
88. Using the NPC Field Guide, manage for the appropriate species for the site. Emphasize conifers where appropriate and discourage aspen and birch in the RMZ (16).
89. Apply the Shipstead-Newton-Nolan Act restrictions, where applicable, on state lands in the subsection (16).
90. Follow the recommendations in the St. Louis River Management Plan (16).
91. Develop prescriptions that consider site-specific conditions such as soil, topography, hydrology, past management, and existing desired vegetation when applying site-level considerations and guidelines (17).
92. Move toward harvesting even-aged managed and non-ERF stands at their normal rotation age (18).
93. Field visit all the identified high-risk, low volume (HRLV) stands during this 10-year plan period to address stands with heavy insect or disease damage, or old, low volume stands (18).
94. Thin or selectively harvest in some aspen, balm of gilead, birch, white pine, red pine, jack pine, balsam fir, white spruce, northern hardwoods, lowland hardwoods, ash, and oak stands to capture mortality and/or increase growth rates (18).
95. Include silvicultural treatments in plantation management to increase productivity such as site preparation, interplanting, release from competition (e.g., herbicide application or hand release), and timely thinning (18).
96. Apply and supervise the implementation of the *MFRC's Voluntary Site-Level Forest Management Guidelines* on treatment sites (18).
97. Continue to implement, supervise, and enforce current DNR timber sale regulations to protect and minimize damages to sites or residual trees from treatment activities (18).
98. Manage some ERF stands for larger diameter, high-quality sawtimber products by retaining adequate stocking and basal area (18).
99. Identify and monitor insect, disease, and harmful exotic species populations as part of the Forest Health Monitoring Program and document their occurrence on state-managed lands (19).
100. Manage existing forest insect and disease problems, as appropriate (19).
101. Manage stands to reduce the potential impact of insects and diseases (19).
102. In extended rotation forest (ERF) stands, a higher level of impact may be accepted as long as it does not jeopardize the ability to regenerate the stand to the desired forest cover type or the management goals for the surrounding stands (19).
103. Improve field staff knowledge about the complexity of factors that affect solutions to preventing or reducing damage cause by wildlife. Do this through training and/or field level coordination on sites where problems exist (20).
104. Consider the potential for wildlife impacts to planted or natural regenerating trees before damage occurs. Coordinate on preventative strategies before planting or timber sales begin (20).
105. Focus forest regeneration efforts in areas less likely to be negatively impacted by wildlife species (20).
106. On sites where damage from wildlife species is anticipated, use mitigation techniques to reduce damage when planting susceptible tree species (20).

107. When deciding what to plant, consider species or stock sources (if available) that are less palatable to wildlife (20).
108. Maintain or increase species diversity across the subsections (21).
109. Maintain connectivity that permits the migration of plants and animals as climate changes in the landscape (21).
110. Evaluate site conditions with respect to climate change when selecting tree species for regeneration (21).
111. Use the concept of carbon sequestering to remove carbon dioxide (the most significant anthropogenic greenhouse gas) from the atmosphere (21).
112. Maintain or increase conifers adjacent to cold-water streams to moderate the microclimate that provides a cooling effect in warm water and retains a snowpack longer that slows discharge in the spring (21).
113. Apply the MFRC's *Voluntary Site-Level Forest Management Guidelines* for tree species at the edge of their range (21).
114. Apply the MFRC's *Voluntary Site-Level Forest Management Guidelines* on visual quality on all vegetative management actives (22).
115. Consider known traditional gathering areas when managing other forest resources (24).
116. Supervise and enforce special product permit regulations to ensure that the site's capacity for future production is not jeopardized (24).
117. Consider managing or using some forest stands for non-timber forest products, such as balsam boughs, berry patches, or decorative tops (24).
118. Develop a sustainable treatment level for decorative tree top (black spruce) harvest (24).
119. Consider the known locations of important wildlife habitats, rare native plant communities or species, and the possible impacts of non-timber forest products harvest practices before issuing special product permits (24).
120. Forest managers should proceed judiciously when issuing special products permits for species where limited knowledge and understanding constrains our ability to know if we are managing these groups of species sustainably (e.g., commercial harvest of mushrooms, lycopodium, and native plant seed) (24).
121. Continue to seek cooperation with other forest landowners to retain existing access to state land and to coordinate new road access development and maintenance across mixed ownerships (25).
122. Follow Minnesota statutes and guidelines and DNR policies for state forest roads (25).
123. Apply the department direction regarding access roads across EILC and other areas that have been reserved (or deferred) from treatment during the 10-year plan (25).
124. Follow strategies identified under other General Direction Statements (issues, goals, strategies in this document) that apply to roads throughout the planning, development, and disposition of forest roads (25).
125. Complete a timber access plan (25).
126. Identify stands that have known cultural resources and consider them during stand selection, stand examinations, and the forest management activity (26).
127. Collaborate with local tribal agencies to enhance the opportunities to identify and protect cultural resources located within the three subsections (26).
128. Apply the MFRC's *Voluntary Site-Level Forest Management Guidelines* pertaining to cultural resources in the management of state lands (26).
129. The subsection planning team will evaluate large-scale (100's to 1000's of acres) disturbance events to determine appropriate action (27).

130. Local land managers will evaluate and determine appropriate actions for small-scale (10's of acres) disturbance events (27).

6. DNR - St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork-Vermilion Uplands Subsections Forest Resources Management Plan Final

Document Title	Source	Date	URL or Address
St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork-Vermilion Uplands Subsections Forest Resources Management Plan Final	Minnesota Department of Natural Resources	2010	www.dnr.state.mn.us/forestry/subsection/index.html

Geographic Extent / Scope: State forest lands administered by the Department of Natural Resources (DNR), Divisions of Forestry, Trails and Waterways, Fish and Wildlife in four northern subsection units (St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork- Vermilion Uplands). These four units cover approximately 5.5 million acres in an area from near Tower on the east to Blackduck on the west, and from Aitkin on the south to International Falls on the north.

Organizations / Agencies involved in plan creation: SFRMP team members include DNR forestry, wildlife, ecological services, and other agency staff. Mostly DNR staff and some consultants listed.

Info on Planning Process: This document is part of step three of the five step process (Initiating the Planning Process; Assessment and Issue Identification; Strategies, DFFC (Desired Future Forest Condition), and Stand Selection Criteria; Draft List of Stands to be Treated and New Access Needs; Final Plan).

Purpose of plan: A 'Subsection Forest Resource Management Plan' (SFRMP) is a DNR plan for vegetation management on forestlands administered by the DNR divisions of Forestry, Fish and Wildlife, and Trails and Waterways. Vegetation management includes actions that affect the composition and structure of forestlands, such as timber harvesting, thinning, prescribed burning, and reforestation. Previous forest management plans were based on administrative boundaries (e.g., DNR forestry areas). The SFRMPs will also consider the condition and management of forestlands not owned by the DNR, but will only propose forest management direction and actions for DNR lands. Consistent with state policy (Minnesota Statutes 89A), the SFRMP process will pursue the sustainable management, use, and protection of the state's forest resources to achieve the state's economic, environmental, and social goals.

VISION(S)

None identified.

ISSUES (Issues)

1. Biological diversity, forest composition, and spatial distribution
2. Age-class distribution
3. Within-stand composition and structure
4. Wildlife habitat
5. Riparian and aquatic areas
6. Timber productivity
7. Forest pests, pathogens, and exotic species
8. Visual quality
9. Harvest levels
10. Access to state land
11. Cultural resources
12. Natural disturbance events

GOALS (General Direction Statements) (# links to issue)

1. Old forest in these subsections is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity (1).
2. Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in these subsections (1).
3. Forest cover-type composition on state lands moves closer to the range of cover-type composition that historically occurred within the ecosystems found in these subsections (1).
4. Patch management in these subsections maintains existing large patches and increases the average patch size on state lands over time, with consideration of natural spatial patterns (1).
5. Managers of state lands in MCBS sites of statewide biodiversity significance implement measures to sustain or minimize the loss to the biodiversity significance factors on which these MCBS sites were ranked (1).
6. Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections (1).
7. Rare native plant communities are protected, maintained, or enhanced in these subsections (1).
8. Even-aged managed cover types will be managed to move toward a balanced age-class structure (2).
9. ERF stands in even-aged managed cover types will be managed to achieve a declining age-class structure from the normal rotation age to the maximum rotation age (2).
10. State lands will include representation of each of the Native Plant Community (NPC) growth stages that historically occurred in these subsections (2).
11. Young, early-successional forest is distributed across the landscape over time (2).
12. Species, age, and structural diversity within some stands will be maintained or increased (3).
13. Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities (3).
14. Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections (4).
15. Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections (4).

16. Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species (5).
17. Forest management on state lands adequately protects wetlands and seasonal ponds (5).
18. Timber productivity and quality on state timber lands is increased (6).
19. Limit damage to forests from insects, disease, and exotic species to acceptable levels where feasible (7).
20. Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands (7).
21. Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings (7).
22. Minimize forest management impacts on visual quality in sensitive areas (8).
23. The SFRMP treatment level for each cover type moves toward the desired age-class structure of even-age managed cover types (both normal and extended rotation forest), and improves the age structure and timber quality of uneven-age managed cover types (9).
24. Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction (10).
25. Cultural resources will be protected on state-administered lands (11).
26. Natural disturbance events that occur on state land within these subsections are promptly evaluated to determine the appropriate forest management need to their impacts (12).

STRATEGIES (General Direction Statement Strategies) (# links to goal)

1. Determine the desired level of effective extended rotation (ERF) for even-aged cover types (1).
2. Utilize Remsoft model to prescribe ERF stands in even-age managed cover types so that when a balanced age-class distribution is achieved the desired amount of effective ERF will be provided (1).
3. The Remsoft harvesting-scheduling model selected ERF, using the criteria provided by the North 4 Core Team (see 3.10 for list of criteria) (1).
4. Manage riparian management zones primarily to reflect old forest conditions (1).
5. Allow some stands to naturally succeed to long-lived cover types with, or without the use of harvest (1).
6. Manage designated old-growth stands and old forest management complexes according to DNR policy (1).
7. Designate ecologically important lowland conifers according to department direction (1).
8. Follow the MFRC *Voluntary Site-Level Forest Management Guidelines (Site-Level Guidelines)* to retain components of old forest in even-age managed cover types (1).
9. Use silvicultural treatments that retain old forest components in some stands (1).
10. Consider the status of old forest within subsections when making decisions to add and offer unplanned wood for harvest (1).
11. Provide current Species of Greatest Conservation Need (SGCN) and Key Habitat data to DNR staff upon request (2).
12. Incorporate new SGCN and Key Habitat locations and data as they are collected in these subsections (2).

13. Select some ERF, OFMC, EILC, and Patch stands based on their association with SGCNs and Key Habitats (2).
14. Stand-level management accounts for SGCN and Key Habitats (2).
15. Increase the acreage of jack pine, red pine, white pine, northern hardwoods, oak, white, spruce/balsam fir and white cedar (3).
16. Increase mixed-forest conditions in some stands in all cover types (3).
17. Forest composition goals and objectives are consistent with the MFRC Landscape plans (3).
18. Maintain or increase average harvest block size across the landscape (4).
19. During assignment of fiscal years to 10-year stand exam list, group harvests within patches in close temporal proximity (4).
20. At the area level, using the *Coordination Framework*, initiate processes for each of the designated patches within the patch (4).
21. For the long term (50+ years), manage designated patches to include characteristics of older NPC growth stages (4).
22. In the short term (10 years), apply management strategies that contribute to the long-term goal stated in (d) above (4).
23. For stands outside of the 53 designated patches, incorporate the initial patch assessment in stand-level decisions (4).
24. When possible, cooperate with other landowners in patch management to maintain existing large patches and increase the average patch size across forest land of multiple ownerships (4).
25. Determine which MCBS sites are of greatest concern or importance for SFRMP over the ten-year planning period (5).
26. Consider the broader context and significance of the MCB site as a whole when assigning management objectives and designing silvicultural prescriptions (5).
27. Determine location and composition of stand conversions based on NPCs (5).
28. Allow some stands to succeed to the next native plant community growth stage, with or without harvest (5).
29. Emulate the within-stand composition, structure, and function of NPC growth stages when managing stands in MCBS sites (5).
30. Apply variable density thinning during harvest or reforestation (5).
31. Apply variable retention harvest techniques during harvest (5).
32. Designate some stands as ERF to provide old forest conditions (5).
33. Increase the use of prescribed fire as a silvicultural technique in managing fire-dependent NPCs (5).
34. Locate roads to minimize fragmentation of a Minnesota County Biological Survey (MCBS) site (5).
35. Emulate natural disturbance conditions in large patch management (5).
36. Apply special management recommendations for known rare features, Species of Greatest Conservation Concern Need and Key Habitats (5).
37. Defer management of some stands that have been identified as having high conservation value for further assessment (e.g., EILC and nominated natural areas, and rare representative ecosystems) (5).
38. Consider timber productivity, trust responsibilities, and other forest management priorities when managing stands in these MCBS sites (5).

39. Forestry, Wildlife, and Ecological Resources personnel will communicate with other landowners, as opportunities arise, to inform them of the significance of these MCBS sites and management options that could be implemented to address the biodiversity objectives of these MCBS sites (5).
40. Provide current rare features database (Natural Heritage Information System) to DNR staff through the DNR Quick Themes in ArcView (6).
41. Incorporate new rare features inventory information as the Minnesota County Biological Survey is completes in these subsections (6).
42. Select some ERF, OFMC, and EILC stands based on their association with rare features (6).
43. During the development of the 10-year stand examination list and annual stand examination lists, land managers check the rare features database and flag those stands proposed for treatments that include a rare feature for follow-up consultation (6).
44. Harvest prescriptions, access plans, and other management proposals identify and implement measures that protect rare features (6).
45. Complete the Minnesota County Biological Survey and document known locations of NPCs with a state rank of critically imperiled (S1) or imperiled (S2), and those NPCs with S-Ranks of S3 to S5 that are rare or otherwise unique in these subsections (7).
46. Manage known locations of critically imperiled (S1) or imperiled (S2) NPCs and those NPCs that are rare statewide or with limited occurrences in these subsections to maintain their ecological integrity (7).
47. Ecological Resource staff identified stands that are high quality examples of rare native plant communities. Those stands were removed from consideration for placement on the 10-year stand exam list (7).
48. Target the selection of stand treatment acres to the appropriate age classes (8).
49. Prescribe ERF stands within even-age managed cover types so that each age class will be represented to produce a sustainable amount of old forest over time (9).
50. Target ERF treatment acres to the appropriate age classes to move toward the declining age-class structure after normal rotation age (9).
51. Determine growth stages stands selected for treatment in these Subsections (10, 13).
52. Strive to emulate the within-stand composition, structure, and function of NPC growth stages when managing stands (10, 13).
53. Consider the distribution of non-timber land cover types (e.g., stagnant conifer types), inoperable stands, and reserved areas (e.g., old growth, SNAs, state parks) in providing representations of growth stages (10, 13).
54. Designated representative ecosystems and High Conservation Value Forests per forthcoming DNR direction (10, 113).
55. Apply ECS Silvicultural Interpretations to management decisions (10, 13).
56. Move aspen, balm of gilead, paper birch, and jack pine cover types toward a balanced age-class structure (11).
57. Increase the treatment level for the paper birch cover type (11).
58. Regenerate most paper birch harvest sites to well-stocked, younger paper birch stands (11).
59. Maintain young, early successional forest in a variety of patch sizes to provide habitat for the associated species (11).
60. Use selective harvesting to encourage diversity of species, ages, and stand structures (12).

61. Implement the *Site-Level Guidelines* designed to maintain a diversity of tree species within a stand (12).
62. Use the NPC Field Guide, site index, soils data, and ECS Silvicultural Interpretations to aid in determining the species composition and structure most appropriate for the site (12).
63. Retain tree species, stand structure, and ground layer diversity within stands when prescribing timber stand improvement and thinning activities (12).
64. Reserve seed trees in harvest areas and site preparation areas, where possible (12).
65. Use the least intensive site preparation methods possible to ensure success (12).
66. Use harvest systems or methods that protect advance regeneration. Retain conditions that favor regeneration and understory initiation (12).
67. Identify some stands where succession is allowed to occur to encourage development of within-stand diversity. Movement to the next successional stage may be achieved with or without harvest (12).
68. Increase and/or maintain by reserving from harvest, targeting species including white pine, jack pine, white spruce, upland cedar, oak, yellow birch, and upland tamarack as a component within appropriate cover types. Silvicultural practices that may add or increase the presence of these target species will include planting, interplanting, and artificial or natural seeding (12).
69. Manage planted and seeded stands to represent the array of plant diversity (12).
70. Use ERF in some even-age managed stands to encourage greater structural diversity (12).
71. Encourage fruit and mast-producing species (12).
72. Continue to use the *Field Guide to the Native Plant Communities in Minnesota: The Laurentian Mixed Forest Province* and associated ECS Silvicultural Interpretations to classify stands to NPC and inform silvicultural prescriptions (13).
73. Provide old forest distributed across the landscape (14, 15).
74. Provide young forest distributed across the landscape (14, 15).
75. Provide a variety of patch sizes across the landscape to better reflect patterns produced by natural disturbances, and attempt to maintain existing large patches (14).
76. Manage to retain the integrity of riparian areas and provide protection for seasonal and permanent wetlands (14).
77. Provide for the needs of species that depend on perches, cavity trees, bark foraging sites, and downed-woody debris (14).
78. Provide for the needs of species associated with conifer stands and mixed conifer/hardwood stands (14, 15).
79. Provide for creation and maintenance of within-stand diversity (14, 15).
80. Manage to favor native plant communities and retain elements of biodiversity significance (14).
81. Consider Natural Heritage Program data and other rare species information during development of both the 10-year and annual stand examination lists (14).
82. Apply the DNR management recommendations for habitats of nongame species (e.g., gray wolves, bald eagles, wood turtles, northern goshawk, and 4-toed salamander) as described in DNR guidelines and policies (14).
83. Provide a range of habitats for short-distance and long-distance (neo-tropical) migratory birds (14).

84. Provide a balanced age-class structure in cover types managed with even-aged silvicultural systems (15).
85. Increase the productivity and maintain the health of even-age managed cover-type stands (15).
86. Continue to manage special management areas for the benefit of game species (15).
87. Apply the *Site-Level Guidelines* relating to riparian areas (16).
88. Manage to maintain or increase old forest in riparian areas (16).
89. Use the NPC Field Guide and associated ECS Silvicultural Interpretations, manage for a species appropriate for the site. Emphasize conifers where appropriate and discourage aspen and birch in the RMZ (16).
90. Follow the recommendations in the St. Louis Cloquet Whiteface Corridor Management Plan (16).
91. Follow recommendations in Tomorrow's Habitat for the Wild and Rare (16).
92. Apply the Site-Level Guidelines (17).
93. Areas will consider landforms in their work areas (e.g., end moraines) that have seasonal ponds and small open-water wetlands, and address those features in site-specific prescriptions that are developed during the stand examination field visit (17).
94. Move toward harvesting even-aged managed non-ERF stands at their normal rotation age (18).
95. Thin or selectively harvest in some aspen, balm of gilead, birch, white pine, red pine, balsam fir, white spruce, northern hardwoods, lowland hardwoods, ash, and oak stands to capture mortality and/or increase growth rates (18).
96. Include silvicultural treatments such as site preparation, interplanting, release from competition (e.g., herbicide application or hand release), and timely thinning in plantation management, to increase productivity (18).
97. Apply and supervise the implementation of the *Site-Level Guidelines* on treatment sites (18).
98. Continue to implement, supervise, and enforce current DNR timber sale regulations to protect and minimize damages to sites or residual trees from treatment activities (18).
99. Manage some ERF stands for large diameter, high-quality sawtimber products by retaining adequate stocking and basal area (18).
100. Respond to insect and disease problems, as appropriate (18).
101. Identify and monitor insect, disease, and harmful exotic species populations as part of the Forest Health Monitoring program and document their occurrence on state-managed lands (19).
102. Follow Minnesota DNR Operational Order 113 (Invasive Species) to minimize the spread of invasive exotic species during forest management activities (19).
103. Adhere to the Minnesota DNR 2010 Invasive Species Program Directive (19).
104. Manage existing forest insect and disease problems, as appropriate (19).
105. Manage stands to reduce the potential impacts of insects and diseases (19).
106. In ERF stands, a higher level of impact from native insect and disease infestations may be accepted as long as it does not jeopardize the ability to regenerate the stand to the desired forest cover type or the management goals of the surrounding stands (19).
107. Improve field staff knowledge about the complexity of factors that affect solutions to preventing or reducing damage caused by wildlife. Do this through training and/or field level coordination on sites where problems exist (20).

108. Consider the potential for wildlife impacts to planted or natural regenerating trees before damage occurs. Coordinate on preventative strategies before planting or timber sales begin (20).
109. Focus forest regeneration efforts in areas less likely to be negatively impacted by wildlife species (20).
110. On sites where damage from wildlife species is anticipated, use mitigation techniques to reduce damage when planting susceptible tree species (20).
111. When deciding what to plant, consider species or stock sources (if available) that are less palatable to wildlife (20).
112. Maintain or increase species diversity across the subsections (21).
113. Maintain or increase structural diversity across the subsections (21).
114. Maintain connectivity that permits the migration of plants and animals as climate changes the landscape (21).
115. Evaluate site conditions with respect to climate change when selecting tree species for regeneration (21).
116. Use the concept of carbon sequestration to remove carbon dioxide (the most anthropogenic greenhouse gas) from the atmosphere (21).
117. Maintain or increase conifers adjacent to cold-water streams to moderate the microclimate that provides a cooling effect in warm weather and retains a snowpack longer, slowing discharge in the spring (21).
118. Apply the *Site-Level Guidelines* for tree species at the edge of their range (21).
119. Apply the *Site-Level Guidelines* on visual quality on all vegetative management activities (22).
120. Consider known traditional gathering areas when managing other forest resources (23).
121. Supervise and enforce special product permit regulations to ensure that the site's capacity for future production is not jeopardized (23).
122. Implement Minnesota DNR regional targets for sustainable decorative tree top (black spruce) harvest (23).
123. Consider the known locations of important wildlife habitats, rare native plant communities or species, and the possible impacts of non-timber forest products harvest practices before issuing special product permits (23).
124. Forest managers should proceed judiciously when issuing special products permits for species where limited knowledge and understanding constrains our ability to know if we are managing these groups of species sustainably (e.g., commercial harvest of mushrooms, Lycopodium spp, and native plant seed) (23).
125. Continue to seek cooperation with other forest landowners to retain existing access to state land and to coordinate new road access development and maintenance across mixed ownerships (24).
126. Follow Minnesota statutes and guidelines and DNR policies for state forest lands (24).
127. Apply the department direction regarding access roads across EILC and other areas that have been reserved (or deferred) from treatment during the 10-year plan (24).
128. Follow strategies identified in other General Direction Statements (issues, goals, strategies in this document) that apply to roads throughout the planning, development, and disposition of forest lands (24).
129. Complete a timber access plan (24).
130. Annual Stand Exam lists are reviewed by DNR archeologists; recommendations for mitigation are implemented as part of sale design (25).

131. The subsection planning team will evaluate large-scale (100's to 1000's of acres) disturbance events to determine appropriate action (26).
132. Local land managers will evaluate and determine appropriate actions for small-scale (10s of acres) disturbance events (26).

7. Lake County Management Plan

Document Title	Source	Date	URL or Address
Lake County Management Plan	St. Louis County Forestry Department	2007	http://www.co.lake.mn.us/

Geographic Extent / Scope: Lake County manages 151,000 acres of tax forfeit land, approximately 12 percent of the land base in Lake County. Over ninety five percent of this land is forested. The remaining percentage is made up of wetlands, brush, water, developed land (gravel pits and buildings), and rock outcrop. Nearly two thirds of the land lies within a corridor running within approximately 10 miles of Lake Superior. Most of this land lies within three Biophysical Regions; the Duluth Uplands, Superior Uplands and Cloquet Island Lake Plain. Three Native Plant Communities subsections represent most of this area; the North Shore Highlands, Laurentian Uplands and Toimi Uplands plant communities.

Organizations / Agencies involved in plan creation: Lake County Forestry Department with the Standing Forestry Commission (SFC) playing an advisory role.

Info on Planning Process: None provided.

Purpose of plan: Document is intended to guide the County Forestry Department in priorities and actions. Lake County's management plan will address all of the landscape scenarios, keeping in mind what the other agencies are doing, while keeping its eye on sustainability, that is, the blending of the ecological, economic and social values of the county.

VISION (Mission of Forestry Department)

It is the intent of the Forestry Department to protect, develop and administer Lake County's land and timber resources to best meet the needs of county residents by utilizing multiple-use, sustained yield principles to provide a diverse mixture of resource uses and outcomes.

ISSUES (Strategic Plan "five fronts", p42)

1. Forest Management
2. Land Consolidation
3. Geographic Information Systems and Monitoring
4. Recreational Opportunities
5. Education

GOALS (headings in "…how the department's staff works toward achieving its goals", p43-46) (# linked to issue)

1. Forest Management (1).

2. Integrated pest management (1).
3. Timber access (1).
4. Fuelwood (1).
5. Gravel (1).
6. Commercially harvested non-timber forest products (1).
7. Special management areas (1).
8. Timber Flow (1).
9. Land Consolidation (2).
10. Geographic Information Systems and Monitoring (3).
11. Recreational facilities and opportunities, existing and future (4)

STRATEGIES ("…how the department's staff works toward achieving its goals") (# linked to goal)

1. Special attention will be given to maintaining or improving big and small game and non-game wildlife habitat through timber management activities and other cooperative efforts with State and Federal agencies and the 1854 Treaty Authority (p47) (1).
2. Forest management options will consider native plant communities (p47) (1).
3. Forestry Department will continue to utilize its tax forfeit Biophysical Inventory information to manage its Northern Hardwoods to determine off site aspen stands for possible conifer conversion and to aid in other future special projects (1).
4. Sustainable management includes the recognition of ecological, economic, and social factors. To manage lands with less than all three factors taken into consideration will not lead to sustainability (1).
5. Forest management options will consider moving towards managing larger patches of forest for interior dependent species while recognizing that small cuts were recommended in the past (1).
6. Managing for disturbance dependent species will continue to be the dominant management tool in the near future with a gradual shift towards some large patch management (1).
7. Foresters select candidate stands to manage from the 10 Year Management Plan, Stands Available for Harvest (1).
8. Natural regeneration of forest species on harvested sites is chosen if the species that is regenerating will be productive on the site, will regenerate within a specified time frame and will survive insects and disease and other natural disturbances to provide a future forest cover type (1).
9. An average of 200 acres per year are site prepped for conifer planting on previously harvested sites where no regeneration will naturally occur or if the natural regeneration will not be productive on this particular site (1).
10. Meet with our Region's leading agencies including the Forest Service, DNR, St. Louis County, MN Department of Agriculture, and The Nature Conservancy to identify forest pests and invasive species and to coordinate funds and management strategies to actively deal with common threats (2).
11. Timber haul road construction, maintenance, and improvement projects are completed as needed for timber sale access and other related land management activities (3).
12. Permits are given out to salvage fuelwood from slash piles on closed timber sales. Harvesting fuelwood from standing living trees is discouraged because of the increased use of hardwoods for commercial purposes and lack of control over achieving desired silvicultural objectives (4).

13. Forestry Department assists the Highway Department in gravel exploration, line location, and timber removal on tax forfeit lands (5).
14. After gravel pit is depleted, the Highway Department reshapes the pit area and the Forestry Department reclaims the area by planting trees that will be productive on the site (5).
15. Lake County meets and communicates regularly with the 14 northern forested counties, the DNR and the Forest Service to monitor any current or new harvesting of non-timber harvest products within the forest (6).
16. The Forestry Department cooperates with other public and private landowners with landscape management activities across ownership boundaries of forest lands where mixed ownership exists (7).
17. Participant in the Manitou Landscape Collaborative and the Sand Lake Seven Beavers Memorandum of Understanding (7).
18. Sponsor and participant in the development and implementation of the Lake County Community Wildfire Protection Plan (7).
19. Lake County is inventorying representative systems through the Minnesota County Biological Survey, DNR old growth stands, and Forest Service Research Natural Areas and other extended rotation forests (ERF) (7).
20. Constant and reliable timber flow from tax forfeit lands (8).
21. Land consolidation is carried out through land exchanges, land purchases, and land sales (9).
22. Efforts will be made to consolidate public ownership away from private ownership and to consolidate government agency ownerships within their individual land bases (9).
23. When there are undivided interest ownerships in tax forfeited land and acquisition of the private undivided interest would serve to complement the long-term management goals and objectives of the tax forfeited land base, the County will attempt to obtain the private undivided interest through purchase, land exchange, or friendly partition action through the courts (9).
24. For the first five years of this plan (2006-2011) monitoring will address specific problem areas such as off-site aspen stands (10).
25. Work collaboratively with the DNR, Forest Service, 1854 Authority and The Nature Conservancy on management plans for the 7 Beavers Area and Manitou Collaborative (10).
26. Site level reserve areas are identified within or adjacent to timber sale areas when timber sale prescriptions are defined (10).
27. The Forestry Department meets with other government agencies, non-profit organizations and local clubs to plan for future recreational facilities and to cooperate on ongoing maintenance and trail relocation (11).

8. Carlton County Tax Forfeited Land Management Plan

Document Title	Source	Date	URL or Address
Carlton County Tax Forfeited Land Management Plan	Carlton County Board	2004	www.co.carlton.mn.us/Departments/Land/

Geographic Extent / Scope: Tax-forfeited lands of Carlton County 72,410 acres of 559,000 total acres in Carlton County.

Organizations / Agencies involved in plan creation: Land Department staff (4) and Plan Steering Committee members (16).

Info on Planning Process: None provided.

Purpose of plan: The mission of the Carlton County Land Department is to professionally manage the County's forest land base in accord with Minnesota Statutes 282 and to improve the quality and value of the County's forest land resources. The plan supports this mission through issue identification, objectives, initiatives, strategic actions, and contextual information.

DEPARTMENT MISSION

The mission of the Carlton County Land Department is to professionally manage the County's forest land base in accord with Minnesota Statutes 282 and to improve the quality and value of the County's forest land resources. The plan supports this mission through issue identification, objectives, initiatives, strategic actions, and contextual information).

In general terms, this updated plan affirms the County's intent to retain and actively manage its tax-forfeited lands as a valuable, renewable resource meeting a variety of economic, social, and ecological values (pg. i).

ISSUES (Principles)

1. Strategic Management
2. Department Administration
3. Land Administration
4. Habitat
5. Forest Roads
6. Recreation
7. Scientific, Educational and Cultural Resources
8. Peat & Non-Timber Resources
9. Timber Management

GOALS (Goals and Principles) (# links to issue)

1. Maintain a natural resource base which generates sustained timber yields as determined by the quality of the land, establishes a diversity of habitats and ecosystems appropriate to the region, and encourages multiple use within the framework of a forest ecosystem

management approach that recognizes the potential and limitations of the County resource as one part of a larger resource and management perspective (1).
2. Possess a professional, competent and adequately funded department overseeing the administration and management of tax-forfeited and other designated lands under County jurisdiction (2).
3. Promote a greater sense of stewardship among the general public towards the natural resources within the county and to foster a sound understanding of the management goals and activities of the Land Department (2).
4. Develop and maintain a comprehensive, appropriately organized, easily understood, and coordinated system for managing and administering tax-forfeited and other designated lands under County jurisdiction (3).
5. Recognize the responsibility to maintain a diversity of distinct ecosystems and habitats which are appropriate to the region and which are within the capability of the County resource to satisfactorily and viably sustain (4).
6. Provide access to County managed lands appropriately to protect, manage, and utilize forest resources for all programs and multiple uses (5).
7. Provide quality opportunities for dispersed recreation (e.g., trails, hunting, wildlife watching) (6).
8. Protect and preserve all features that have significant scientific, cultural, or educational value (7).
9. Understand the economic potential of its non-timber resources and, as ecological and market conditions allow, realize that potential (8).
10. Produce and make available a viable mix of merchantable timber species at sustainable levels within limits set by sound silvicultural and ecological practices (9).

STRATEGIES (Initiatives or Strategic Actions) (# links to goal)

1. Aspen: Manage this resource with three primary objectives in mind: retain amount of ac. on lands that can be managed and harvested; balance age class distribution of the resource so as to ensure a relatively sustained, even yield over time; and maintain mix of tree species with the general aspen cover type (1).
2. Nemadji River Basin: Experiment with a variety of management approaches on these lands to determine which are best for securing quality stands and insuring vigorous regeneration of desired species (1).
3. Wildlife Management Areas: While most management will be determined by ecological potential of the landscape and cover type-specific silvicultural practices, on designated wildlife management areas habitat and wildlife values will take precedence (1).
4. Staff Transition: Knowledge of retiring long-term employees is captures, preferably directly as part of the inventory's electronic database, so it is readily accessible to future foresters (1).
5. Institute enhanced land administration techniques including the implementation of a Geographic Information System (GIS), updated aerial photography, and integrated resource maps and databases with other managing agencies (2, 3).
6. Routinely update the resource inventory (2, 3).
7. Create a digital database of forest plot information (previously produced by Natural Resource Services, Limited) and integrate it with GIS-based inventory (2, 3).
8. Create a County Land Management Advisory Committee and provide staff and support services to operate the committee (2, 3).

9. Undertake periodic audits as required by SFI (?). As part of this effort, the Department will work towards the goal of undergoing third-party audits and certification (probably by 2006) (2, 3).
10. Consider one of several options to "capture" extensive knowledge and historical understanding of events, activities, and issues held by current Land Commissioner and County Forester. This also includes need for smooth transition in staff. Optional approaches include hiring replacement forester 1-2 years before their planned retirement; embedding their observations and insights into the inventory database; retain one or both as consultants for 1-2 year period after their retirement (2, 3).
11. Under 6.2 Policies: Classify all parcels of tax-forfeited property under County administration within one year of forfeiture. All lands should have their classifications reviewed at least once every five years (4).
12. Under 6.2 Policies: As lands become tax-forfeit within the corporate limits of a city and after determination of any value to an existing or proposed management unit, the parcel may be sold to abutting landowners (per State Law) or to the municipality (4).
13. Under 6.2 Policies: Additional leases for hunting cabin sites will not be likely. Current leases and any new ones are to adhere to guidelines (4).
14. Under 6.2 Policies: Leases for peat extraction are to be coordinated with the Minnesota Department of Natural resources who will generally be the lead party (4).
15. Under 6.2 Policies: Negotiate exchanges or land with Federal, State, Reservation, municipal or private landowners as appropriate to acquire a better inventory of land resources to meet County management objectives (4).
16. Under 6.2 Policies: Examine each new property on the tax-forfeiture roles for improperly abandoned wells and sources of point and nonpoint contamination including underground storage tanks and wildcat landfills (4).
17. Under 6.2 Policies: Coordinate resource planning and implementation, as will be appropriate, with other management agencies specifically including the Minnesota DNR (all divisions), University of Minnesota Forestry Center, Fond du Lac Reservation Business Committee, adjacent county land departments, and private land owners (4).
18. Contact Carlton County Historical Society and the Fond du Lac Reservation Business Committee regarding potential cultural and historical sites on lands prior to management activities, especially harvesting, site preparation and road construction. As appropriate identify, protect, remove or otherwise address any significant features contained on the site (4).
19. Raise annual cabin lease fee by $25 every three years (4).
20. Consider land exchanges to consolidate ownership, provide access, or otherwise enhance management objectives (4).
21. Under 7.2 Policies: Adopt an ecosystem approach to understanding and managing its tax-forfeited land base (5).
22. Under 7.2 Policies: Utilize a variety of management techniques and apply them as best suited to maintain the desired ecosystem and resource values on a given parcel (5).
23. Under 7.2 Policies: Recognize the unique qualities and management limitations of the extensive red clay areas of Carlton County especially the ravine terrain of the Nemadji River watershed (5).
24. Under 7.2 Policies: Work closely with the Minnesota DNR to promote game and non-game wildlife (5).

25. Under 7.2 Policies: Support research into ways of enhancing and maintaining desired water quality through appropriate forest land management (5).
26. Support water quality research through in-kind participation, endorsement of projects, and the like (5).
27. Support additional training for foresters, loggers, and landowners regarding habitat, water quality, and related issues (5).
28. Cooperate with the Minnesota DNR, Fond du Lac Reservation and others concerning habitat research, management, and conservation of biological diversity (5).
29. Under 8.2. Policies: Establish three classes of roads (6).
30. Under 8.2 Policies: Forest roads are built primarily for specified silvicultural purposes and, if appropriate, secondarily for recreational purposes (6).
31. Under 8.2 Policies: Restrict vehicular access through gates or other means to any forest road in order to protect [health of lands and people] (6).
32. Under 8.2 Policies: Seek assistance and services from other Federal and State agencies in road location and design (6).
33. Under 8.2 Policies: Coordinate new road location, construction, and maintenance with other public and private forest land managers (6).
34. Under 8.2 Policies: Priority for use of forest roads lies with forest management activities, however, good faith efforts will be made to adjust schedules and procedures so as to avoid or minimize conflicts with recreational uses (6).
35. Under 8.2 Policies: Where appropriate sustain County management objectives including access to landlocked parcels, assume the responsibility for the maintenance and liability of former Town roads where the affected Township agrees not to vacate the roadway (6).
36. Maintain and improve current roads as needed (6).
37. Under 9.2 Policies: Provide dispersed recreational opportunities on most County managed lands (7).
38. Under 9.2 Policies: Undertake efforts to encourage and support additional recreational trail routes including those for snowmobiles, all-terrain vehicles, horseback riding, skiing, hiking, and hunting and walking (7).
39. Under 9.2 Policies: Manage trails, forest roads and lands according to guidelines (7).
40. Under 9.2 Policies: Inventory and map roads and trails (7).
41. Under 9.2 Policies: Revisit policies regarding motorized recreational vehicle use on County managed lands in conjunction with reviews of those uses by the Minnesota DNR on state forests within the county or within 10 years whichever comes first (7).
42. Under 9.2 Policies: Encourage the use of specific areas for traditional, non-commercial gathering activities including berry picking, nut gathering, and maple syrup tapping (7).
43. Under 9.2 Policies: Issue permits for maple syrup tapping operations so as to prevent conflict over use of sugar bushes (7).
44. Under 9.2 Policies: Follow policies that govern hunting stands on County tax-forfeited lands (7).
45. Under 9.2 Policies: Integrate considerations for aesthetics, site design, and visual impact into the management of every unit and stand (7).
46. Under 9.2 Policies: Primitive camping on County-administered tax forfeit land is permitted under stated guidelines (7).
47. Under 9.2 Policies: Inform the public about recreational opportunities on County managed lands. This can include publication of brochures and maps indicating locations, signs, identifying trails, and other activities (7).

48. Map roads and trails and integrate into GIS inventory (7).
49. Designate allowable uses for all roads and trails and sign appropriately (7).
50. Review trail use designations within 10 years (7).
51. Apply site-level guidelines regarding visual quality management of cuts, road design, and trail layout where appropriate. Further, specify in stand prescriptions any such considerations and recommended actions (7).
52. Under 10.2 Policies: Cooperate with the Minnesota Historical Society, Carlton County Historical Society, and the Fond du Lac Reservation regarding the location, identification, and protection of cultural sites (8).
53. Under 10.2 Policies: Request regular updates from the Minnesota DNR regarding endangered, threatened, or special interest plant and animal species or ecosystems located in Carlton County (8).
54. Under 10.2 Policies: Cooperate with the University of Minnesota Forestry Center, Jay Cooke and Moose Lake State Parks, local schools, and forestry industry regarding the identification of sites suitable for educating people about forests and the environment (8).
55. Contact appropriate resource agencies as part of the timber sale stand appraisal process. Modifications in sale design will reflect comments received (8).
56. Under 11.2 Policies: Support research into the location, amount, and characteristics of marketable peat and peat moss on County managed lands (9).
57. Under 11.2 Policies: Support research into alternative methods of peat extraction including renewable peat cropping (9).
58. Under 11.2 Policies: Evaluate gravel resources on County managed lands for retention for use by the County (9).
59. Under 11.2 Policies: Consider seasonal leases for hay harvesting (9).
60. Under 11.2 Policies: Consider annual leases for commercial clay mining (9).
61. Under 11.2 Policies: Support by not necessarily with funding, the preparation of enhanced soil surveys and similar resource data for all land within Carlton County (9).
62. Respond to requests for information on peat, gravel, and other non-timber resources (9).
63. Under 12.2 Policies: Adopt the "Managers Handbook" series prepared by the North Central Experiment Station of the US Forest Service as the basic management guidelines for tree species and type (10).
64. Under 12.2 Policies: Prepare on-going five-year tactical management plans (10).
65. Under 12.2 Policies: Provide one or more accessible sites for individual and commercial fuelwood harvesting (10).
66. Under 12.2 Policies: Sell timber through auctions and over-the-counter sales in conformance with state law and market demand (10).
67. Under 12.2 Policies: Seek the efficient use of harvested trees and resources (10).
68. Under 12.2 Policies: Diversify the size of timber sales to better accommodate varying capacity of area logging operators (10).
69. Continue use of a mix of auction and informal sales as means of providing opportunities to a mix of logging operators and meeting needs of specific sales (10).
70. Support forest research intended to improve the health, productivity, and management of all forests within or affecting the County. This support may be through funding or in-kind assistance (10).
71. Generally manage the timber resource according to the specified table (Table 13: Projected Harvest Schedule by Decade) (10).

9. St. Louis County Land Department Long-Term Resource Management Plan

Document Title	Source	Date	URL or Address
St. Louis County Land Department Long-Term Resource Management Plan	St. Louis County	2006	Land Department Government Services Building 320 West 2nd Street, Room 607 Duluth MN 55802

Geographic Extent / Scope: St. Louis County is the largest county east of the Mississippi River and also has the largest County Forest System. St. Louis County manages 872,100 acres of which 639,400 is considered commercial forest.

Organizations / Agencies involved in plan creation: Prepared by Applied Insights North and Pro-West and Associates, Inc. for the St. Louis County Land Department.

Info on Planning Process: None provided.

Purpose of plan: This document presents the Long-Term Resource Management Plan for the roughly 900,000 acres of State tax forfeited lands administered by the St. Louis County Land Department. The document satisfies the requirements of SOP-024 as developed by the County under the terms of its certification by the International Organization for Standardization (ISO) for the ISO 14000 standards series. This plan sets operational objectives and targets for a 60-year time period to achieve the broad management strategies set out in the Resource Management Strategy; provide an overview of the Land Department's planning context and process; describe objectives and strategies for forest development and sustainable forest management, recreation, tax forfeited land administration, and extractives and other non-timber commodities; and provide basis to ensure that forest development and sustainable management strategies are monitored. The plan addresses objectives, strategies, and practices for land administration, forest management, special site management, recreation, and extractives and non-timber commodities.

VISION (Mission)

To promote, enhance, and protect St. Louis County tax forfeited trust lands by providing professional expertise in the use of sound land management principles for: generating financial return to the county and taxing districts; performing public services; maintaining and improving forest health and productivity; providing raw material for local industry; providing opportunity for tourism and recreation; protecting wildlife habitat, soil resources, and water quality; and providing for scientific research..

Goals (objectives) and strategies are broken down into four categories.

A: Desirable future forest conditions.
B: Forest spatial patterns.
C: Timber productivity.
D: Public Involvement and collaboration.

A. Goals and strategies related to State Tax forfeited Land Administration.

GOALS (Stated as objectives)

1. Retain a minimum land base of approximately 879,000 acres of tax forfeited trust land suitable for ongoing management for multiple values including forest products, recreation, and ecological functions.
2. Consolidated ownership with most land contained in large contiguous blocks and significantly reduced amount of land in isolated, unmanageable parcels so as to facilitate more effective overall management.

STRATEGIES (not linked to specific goals in plan)

1. Land management: Identify land essential for County management objectives or which must be retained for other reasons (e.g., law), expressly designate this land for retention, and establish management objectives for it.
2. Land sale: Increase opportunities for private development and enhancing the tax base by selling State tax forfeited trust land that is not suitable for achieving county management objectives. This land will be identified and proactively offered for sale over the long term through public auction.
3. Land acquisition: Establish program to identify specific land parcels for acquisition to consolidate land base, minimize or eliminate future public service costs to remote private lands, and proactively seek to acquire this property. Lands gained through this program will be balanced by the disposal of other county lands so as to retain the property tax base.
4. Land exchange: Undertake a proactive program whereby specific county-administered lands are identified and negotiated for exchange (e.g., isolated and small parcels) with specific landowners (e.g., USFS, MDNR, Potlatch, RGGS, and Forest Capital Partners).

B. Goals and strategies related to <u>Forest Management.</u>

GOALS (Stated as objectives)

1. In terms of forest cover type the St. Louis County Land Department in its Short-Term Operating Plan has established the following objectives for its forest resource:
   - Northern mixed forest (aspen / birch / spruce / fir):
     - Reduce number of acres with aspen emphasis from around 300,000 to 290,000.
     - Reduce number of acres with birch emphasis from around 54,000 to 44,000 or less.
     - Maintain number of acres with balsam fir emphasis.
     - Increase number of acres with white spruce emphasis or major component from 6,600 to 7,500.
   - Lowland conifer:
     - Maintain number of acres within general type and for each species (tamarack, black spruce, northern white cedar).
   - Jack Pine / black spruce:
     - Increase jack pine acres from 6,200 to 6,800.
     - Double upland black spruce acres from 1,400 to 2,800.
     - Introduce upland tamarack as a component species where possible.
   - Northern Hardwoods:
     - Maintain number of acres and increase white cedar and tamarack component.
   - Red and White Pine:

- Increase number of acres from 23,300 to 26,000.
- Ash and Lowland Hardwoods:
  - Maintain number of acres.

2. Seek appropriate distribution of forest cover in terms of vegetation growth stage for each native plant community.
3. Development of management systems (including location, harvest, regeneration, succession, etc.) based upon native plant community.
4. Maintenance of forest road system at a level of 250 miles.
5. Development of integrated forest resource databases as basis for strategic and tactical management and monitoring.

STRATEGIES (not linked to specific goals in plan)

1. For those lands where St. Louis County has scattered patterns of ownership the Land Department will:
   - Apply best management practices to site level activities.
   - Actively participate in the Northeast Regional Forest Landscape Committee.
2. For those lands where St. Louis County has contiguous blocks of ownership, in addition to the previous two strategies, the Land Department will:
   - Secure and apply knowledge regarding landscape patterns and dynamics, and, efficacy of management activities in achieving landscape objectives.
   - Incorporate a precautionary approach toward management.
3. Develop GIS-based map of native plant communities for entire St. Louis County.
4. Develop SOPs addressing all aspects of native plant community based management including management options for each community type.
5. Develop integrated databases as foundation for strategic and tactical planning and monitoring.

C. Goals and strategies related to <u>Special Site Management.</u>

GOALS (Stated as objectives)

1. Known special sites on county managed lands are protected.
2. Representation across the range of habitats supportable by the ecological potential of the tax forfeited land base with a geographic distribution, variation in size and character and other attributes as necessary for sustaining the habitat and the species and biotic communities that depend upon it.
3. Old growth cover types on State tax forfeited lands are sustained.

STRATEGIES (not linked to specific goals in plan)

1. Evaluate red and white pine, yellow birch, northern hardwood, and northern white cedar stands for old growth status.
2. Seek opportunities to enhance wildlife habitat with particular focus on cooperative projects.
3. Achieve landscape level habitat objectives primarily through coarse filter management of vegetative cover (see Forest Management).
4. Apply appropriate fine filter, or site-specific activities, to protect, enhance, or restore specific species or biotic communities on specific sites. This will involve reliance on

expertise from DNR, USFS, and other entities and development of a library of fine filter techniques for specific species or communities.

5. Create new or amend existing SOP to address Geography-Based Modifications to general management that address specific wildlife or habitat issues. Among the issues to be addressed are Canada lynx habitat east of Highway 53, and, sharp tail grouse.

D. Goals and strategies related to <u>Recreation.</u>

GOALS (Stated as objectives)

1. Roughly 840-860,000 acres of land base to provide a variety of dispersed recreation opportunities.
2. No more than 660 non-shoreland cabin leases.
3. Maintain or reduce the number of shoreland cabin leases.
4. All recreation trails on State tax forfeited lands are identified, mapped, and designated as to use.
5. Minimal level of off-trail travel by motorized recreational vehicles with no damage to sensitive areas and no harm to forest management (e.g., regeneration).
6. No non-authorized structures including permanent hunting stands on State tax forfeited lands.
7. Roughly $150,000 annually disbursed through the Outdoor Recreation Fund Program.

STRATEGIES (not linked to specific goals in plan)

1. Maintain a land base through the strategies and practices identified in Chapter 4 (State Tax Forfeited Land Administration).
2. Explore a shoreland lease sale project supported by special state legislation.
3. Maintain current policy by which no new forestland cabin leases are issued.
4. Continue projects to identify and map all trails on State tax forfeited land, evaluate each for its appropriate use, and then officially designate the use of each. This should be coordinated with other land managers such as the DNR, USFS, and major private managers, and, with trail user groups.
5. Authorize and fund annual grants through the Outdoor Recreation Project Fund Program.

E. Goals and strategies related to Extractives and Non-Timber Commodities.

GOALS (Stated as objectives)

1. Retention of all significant known and suspected gravel/sand resources on State tax forfeited lands.
2. Minimum number of gravel/sand pits open at any given time required to adequately serve the various geographic areas of the county.
3. Responsible harvest, in terms of amount and practice, of other non-timber commodities.

STRATEGIES (not linked to specific goals in plan)

1. Complete the mapping of gravel resources on State tax forfeited lands.
2. Identify service areas for operating gravel pits so as to minimize the number of pits open at any given time and to encourage the depletion and appropriate closure of existing pits before opening new ones to service same geographic area.
3. Continue handling harvesting of black spruce tips and balsam bough as permitted products.

4. Develop SOP or Work Instruction governing black spruce tip harvesting.
5. Continue handling of birch bark harvesting, maple syrup tapping, and similar operations as non-permitted but forester-directed activities.
6. Continue to make appropriate peatlands available for peat harvesting operations.
7. Monitor harvest levels and practices of non-timber commodities.

10. St. Louis County 2010-2012 Land Department Business Plan

Document Title	Source	Date	URL or Address
St. Louis County 2010-2012 Land Department Business Plan	St. Louis County	2010	Land Department Government Services Building 320 West 2nd Street, Room 607 Duluth MN 55802

Geographic Extent / Scope: St. Louis County is the largest county east of the Mississippi River and also has the largest County Forest System. St. Louis County manages 872,100 acres of which 639,400 is considered commercial forest. The lands have been classified using the National Ecological Hierarchy classification system along with Minnesota Native Plant Communities. St. Louis County is located entirely in the Laurentian Mixed Forest Province. There are three sections and seven subsections located within the County boundaries.

Organizations / Agencies involved in plan creation: St. Louis County Land Department.

Info on Planning Process: None provided.

Purpose of plan: A vision for the department and key initiatives aligned with the St. Louis County Commissioners' Priority Areas.

VISION

St. Louis County Land Department's vision is to provide the optimum combination of benefits from tax forfeited trust lands through leadership and a commitment to a standard of excellence in the management of the Tax Forfeited Trust Lands for the people of St. Louis County.

ISSUES (Major Issues)

1. Wood and fiber availability and forest productivity health
2. Maintenance of the working forestland base
3. Social, economic, and environmental forces
4. Forests
5. Tax forfeited land administration
6. Special sites
7. Extractives
8. Recreation

GOALS (Department Goals) (# links to issue)

1. Maintaining and improving forest health and productivity (1, 2, 3, 4, 7).
2. Providing opportunity for tourism and recreation (8).
3. Protecting wildlife habitat, soil resources, and water quality (3, 4).
4. Providing raw material for local industry and financial return to the County and taxing districts (1, 5, 7).
5. Providing scientific research (1, 2, 3, 4).

STRATEGIES (Tactics, Initiatives, Actions Steps, and Management Approach) (# links to goal)

1. The department shall conduct field inspections using inspection checklists and site prescriptions to compare performance on activities that occur on State tax forfeited lands in St. Louis County. Corrective action will take place if the quarterly summary of inspections indicates that performance is below 85% compliance in any given area (1).
2. The department shall follow its green-up requirement that provides for visual quality. Trees in clear-cut harvest areas are at least three years old or five feet high at the desired level of stocking before adjacent areas are clear-cut. Average size of clear-cut harvest areas do not exceed 120 acres, except when necessary to respond to forest health emergencies (2).
3. The department shall minimize chemical use required to achieve management objectives while protecting employees, neighbors, the public, and the forest environment (3).
4. The department shall reforest after final harvest, unless delayed for site-specific environmental or forest health considerations, through artificial regeneration within two years or two planting seasons, or by planned natural regeneration methods within five years (4).
5. The department and/or through cooperative efforts with other partners, will provide in-kind support or funding for forest research to improve forest health, productivity, and sustainable management of forest resources, and the environmental benefits and performance of forest products (5).
6. Work with other government agencies, research institutes to cooperatively define forest conditions and common goals for ecosystem sustainability (1, 2, 3).
7. New management techniques are being integrated into forestry practices to enhance ecological integrity (1, 3).
8. Determine whether it is in the public's best interest to return tax forfeited lands to private ownership or to retain lands for resource management; larger blocks of contiguous tax forfeited lands are more suitable for retention and smaller, isolated parcels located near roads and utilities are more suitable for sale or exchange (4).
9. Manage a minimum land base of 879,000 acres for the long term (4).
10. It is not the intent to set aside and designate all special site candidates, but rather to identify, designate, and manage "good examples" (Issues, 6).
11. Procedure of identifying, nominating, reviewing, and designating special sites (Issues, 6).
12. Special Site locations and management guidelines which protect the site from destructive disturbance is made available to the staff (Issues, 6).
13. Education of staff (5).
14. Procedure of identifying, nominating, reviewing, and designating special sites (5).
15. Inventory of potential gravel resources in the county (4).
16. Continue Forest Recreation Specialist on staff (Issues, 8).
17. Continue to cooperate with public and private partners to designate and locate motorized and non-motorized trails, and resolve and mitigate land-use conflicts (Issues, 8).

18. Continue to carry out the Recreation Cabin Leasing program in a manner that minimizes undesirable social or environmental effects which does not conflict with other important or dominant uses of the lands and resources (Issues, 8).

11. Cook County Community Wildfire Protection Plan

Document Title	Source	Date	URL or Address
Cook County Community Wildfire Protection Plan	Cook County Board	2004	http://www.co.cook.mn.us/index.php/wildfire-protection-plan

Geographic Extent / Scope: Cook County.

Organizations / Agencies involved in plan creation: Covill Fire Department, Gunflint Trail Fire Department, Hovland Fire Dept., Tofte Fire Dept., Bureau of Indian Affairs - Grand Portage, Cook City Department of Emergency Mgmt., Cook City Sheriff's Dept., MNDNR, Cook City Firewise Council, MN Firewise Program, Community Members, Grand Marais Fire Dept., Grand Portage Fire Dept., Lutsen Fire Dept., Schroeder Fire Dept., Arrowhead RDC, Cook City Commissioners, Cook City Planning and Zoning, Dept. of Emergency Mgmt. - Homeland Sec, USFS - SNF, MN Incident Command System, Cook City Fire Chiefs Assoc, Small Business Reps.

Info on Planning Process: The core group led by local county government officials working with area fire departments, the Minnesota DNR, and the US Forest Service met to determine interest in developing a community Wildfire Protection Plan and to initiate an interagency inventory and assessment of fuel hazards and community related infrastructure protection and mitigation needs. This interagency core group proposed 15 different planning areas to present to Cook County communities for project input prioritization and review. The overall plan development steps followed: 1) Convene decision makers; 2) Involve federal agencies; 3) engage interested parties; 4) Establish a community base map; 5) Develop a community risk assessment; 6) Established community priorities and recommendations; 7) Develop an action plan and assessment strategy; and 8) Finalize community wildfire protection plan.

Purpose of plan: Identify and prioritize Wildland/Urban Interface areas within Cook County (including federal and non-federal lands) for hazardous fuels reduction treatments and recommends methods for achieving hazardous fuels reductions. Outline measures for reducing fire danger to structures throughout Cook County at-risk communities.

VISION (Two document objectives identified)

1. Identify and prioritize Wildland/Urban Interface areas within Cook County (including federal and non-federal lands) for hazardous fuels reduction treatments and recommends methods for achieving hazardous fuels reductions.
2. The plan outlines measures for reducing fire danger to structures throughout Cook County at-risk communities.

ISSUES (None listed)

Wildfire and community preparedness.

GOALS (None listed, the following gathered from introduction)

1. Combat the wildland fire issue….It is impossible to stop all wildfire ignitions from occurring, but appropriate mitigation measures CAN make a difference.
2. Completion of a CWPP helps communities tap into national funding resources such as National Fire Plan funding which annual provides millions of dollars to help states and communities with community fire planning, hazardous fuel reduction, and wildfire prevention across the nation.
3. Defines the steps and recommendations developed by a core planning committee, and the final recommendations as edited, reviewed and prioritized by the local community.

STRATEGIES (Activities for Community Fire Protection)

1. Firewise Assessments – Predetermined evaluation factors assigned to assess potential hazards and risk to a homeowners structures.
2. Improve ingress/egress – improve road, approach and turn around capabilities for responding emergency vehicles such as structural fire engines and ambulances to provide better protection capabilities and evacuation procedures [for] the community and the public.
3. Dry Hydrants – An arrangement of pipe permanently connected to a water source other than a piped, pressurized water supply system that provides a read means of water supply for firefighting purposes and that utilizes the suction capability of fire department engines.
4. Communication System: Recent state-wide initiative and experience from recent major fires shows a need to upgrade communications to achieve interoperability among volunteer fire departments and other agencies.
5. Homeowner Firewise mitigation measures – actions taken by homeowners that moderate the severity of a fire hazard or risk.
6. Sprinkler systems – water sprinkling systems set up by home owners or fire protection agencies to wet down structures or slow down the fire behavior of an approaching fire.
7. Firewise Communities – Communities completing the designated projects and receiving designation under the Firewise community program. Cook County is not a Firewise Community by definition; however Cook County has been recognized nationally for its firewise efforts across the entire county.
8. Fuel hazard treatments on private, state, and county lands including:
    a. Chipper Days – identified neighborhoods needing brush fire clearance. A day or two will be arranged for green waste to be collected, chipped, and recycled after homeowners have cleared their brush.
    b. Prescribed burning – Controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions, which allows the fire to be confined to a predetermined area, and to produce the fire behavior and fire characteristics required to attain preplanned fire treatment and resource management objectives. Burning options include underburns, patch burns, and broadcast burns.
    c. Harvesting – selective cut, partial cut, and/or clear-cut.
    d. Thinning – the removal or pruning of strategic trees within pine stands to reduce the density of ladder fuels, provide fuel breaks, or reduce the potential of crown fires.

e. Crushing – a mechanical means of grinding and chopping vegetative materials to reduce fuel loading or build up
f. Pile and Burn – if other means are not applicable, flammable fuels are piled and later burned when conditions are appropriate. This treatment type is appropriate in stands where there is not enough merchantable fuel to harvest, too much dead and down fuel to broadcast burn, and near private property where structures are present, or in harvested stands with logging slash.

9. Evacuation Plans for each VFD area. The importance of these plans was demonstrated during the Ham Lake and Cavity Lake wildfire events. All VFD area currently working on evacuation plans.
10. Biomass removal – Development of a biomass facility and industry. This would provide a marketable method for fuel reduction activities and therefore allow for more extensive fuel reduction treatments.